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EMPLOYMENT-POVERTY LINKAGES AND POLICIES: THE CASE OF BOLIVIA

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Preface

The experience of countries that succeeded in reducing poverty significantly indicates the importance of high rates of economic growth in achieving this. High growth, however, is not a sufficient condition for poverty reduction; the pattern and sources of growth as well as the manner in which its benefits are distributed are equally important from the point of view of achieving the goal of poverty reduction. And employment plays a key role in that context. Indeed, countries which attained high rates of employment growth alongside high rates of economic growth are also the ones who succeeded in reducing poverty significantly.

In view of the importance of employment as a route out of poverty, the ILO and SIDA agreed to collaborate in undertaking a series of studies to analyse the linkage between economic growth, employment and poverty reduction. The present study on Bolivia along with studies on Bangladesh, Ethiopia, Uganda and Vietnam forms part of this series; and its main purpose is to contribute to an understanding of the linkage mentioned above and to the identification of policies that could be used to engender higher rates of economic growth and employment generation, and thus achieve a faster reduction in poverty.

Since 1985 Bolivia has implemented a number of structural reforms aimed at stabilizing the economy; and as a result, the country has achieved economic stability and moderate but stable economic growth during most of the 1990's. The reform process however has produced far less favourable results in terms of employment generation and poverty reduction, and Bolivia's social indicators remain weaker than the average for Latin America. In 2001 total poverty incidence was measured at 64 percent of the population whilst as high as 90 percent in rural areas.

The present study focuses on analysing the linkages between output growth, employment and poverty, at both the macro and micro levels. At the macro-level, the linkage between poverty in its income dimension and output growth is conceptualised in terms of the average productivity of the employed workforce which is reflected in the level of real wages and earnings in self-employment. The analysis of the changes that occurred in the structure of employment and in the productivity of various sectors and occupations during the period between 1988 and 2001 shows that overall economic growth has not translated into growth of productive employment. In general terms, the poor have remained in low productivity employment, unable to increase their incomes and thereby escape poverty.

In fact during the years of relatively rapid economic growth, the sectors that presented the highest growth rates were those with the lowest employment-output ratios (such as financial services, transport and telecommunication, electricity, gas and water). The only labour-intensive sector to present stable and relatively high growth rates in employment was commerce. In the manufacturing sector the high growth rates in production and employment exhibited during most of the 1990s permitted productivity to stay at a constant level during that period. Yet, during the economic crisis at the end of the 1990s and beginning of the 2000s, manufacturing firms reduced employment in order to achieve productivity gains. As for the various manufacturing sub-sectors, the 1990's trend of real wages increasing faster than labour productivity was reversed at the end of the decade. The agricultural sector employs the largest share of the labour force

(between 43% and 45% during the period under analysis), but is characterized by low productivity and low incomes. Other rural activities generate better-paid jobs but their incidence in total rural employment is very limited.

At the micro-level the growth, employment and poverty linkage is reflected in the type and level of productivity of the economic activities in which the earning members of the household are engaged. In order to determine the impact of different variables on the probability of a household being poor, the study uses an econometric model. It is found that educational and employment related variables are the most important determinants of a household being poor. Moreover facilitating household's access to productive assets as well as access to credit can also increase the probability of households escaping from poverty.

The study concludes with a section on economic and social policy implications of the analysis. These various policies are grouped into the following categories; i) expanding employment and income opportunities for the poor, ii) developing the productive capacities of the poor and iii) increasing participation and social integration. Promoting rural development constitutes one of these policy suggestions aiming to provide support for the rural poor who are engaged primarily in agricultural employment. Moreover it is suggested that policies should focus on: increasing the quality, efficiency and equity of access to educational services, especially for primary and secondary education. In addition programmes should be established to improve the access of indigenous people to the education system so as to reduce inequalities based on ethnic discrimination.

While funding provided by the Swedish International Development Cooperation Agency (SIDA) for the present study (and the others in the series) is thankfully acknowledged, mention should be made of Dr. Per Ronnas, Chief Economist, SIDA, who played a critical role in initiating this collaborative project. We would like to thank him for his personal interest, encouragement, and technical support (by way of suggestions and comments at various stages). Thanks are due to my colleague Francisco Verdera at the ILO Sub-Regional Office in Lima for his help and support in organising this study.

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1. Introduction

In 1985, Bolivia embarked on a comprehensive program of structural reforms aimed at stabilizing its economy and at removing structural constraints that prevented sustainable economic growth. As a result, the country achieved economic stability and moderate but stable economic growth during most of the 1990s. Besides, successive governments have implemented various social programs aimed at improving living conditions of the poorest segments of the population. Although there have been noticeable attainments in terms of poverty reduction, as indicated by the improvement in various social indicators in recent years, Bolivia's social indicators still remain weaker than the average for Latin America and are close to levels observed in Sub-Sahara Africa. Social conditions are especially acute in rural areas, where 90 percent of the population still lives in poverty.

Different studies have tried to assess the magnitude of poverty in Bolivia and to explain what determines it (World Bank 1990, 1996, 2002; Vos, Lee & Mejia 1998).
Various studies analyze the characteristics that determine the probability of individuals and households being affected by poverty. There are certain characteristics related to labour market conditions that explain income differentials among individuals and households, such as the activities from where incomes are obtained, the location of households (i.e. urban vis-à-vis rural area), the labour category of individual workers or household members, etc. Other features are related to certain conditions of individual workers, such as the educational level attained, number of years of labour experience, etc. However, these various studies all identify human capital (i.e. the educational level of individuals) as being the single most important determinant of income disparities and varied access to basic needs satisfaction amongst the population.

According to many observers (World Bank, IMF and Bolivian Government), urban poverty in Bolivia is linked to the problem of employment and low human capital of workers. On average, 85% of urban family income is derived from labour activities. Labour income, particularly in the entrepreneurial and semi-entrepreneurial sectors, which has experienced growth rates of around 5% a year, stands in contrast with real family incomes (through self-employment), which have remained virtually stagnant. In the 1990s, the shifts in wage disparities were explained mainly by the fact that there was greater demand for skilled labour in more advanced sectors of the economy, while those sectors requiring unskilled labour saw incomes lag behind.

In rural areas, poverty is explained largely by the low productivity of the farm sector and the low price that farm products fetch in the marketplace. Productivity is affected by the use of small-scale production techniques, unskilled labour, water shortages, a lack of basic production infrastructure, the high cost of capital, a lack of definition of ownership rights with respect to the land and natural resources, and other factors that prevent the optimum utilization of the land. Besides, the lack of road infrastructure results in high transport costs, which in turn have an impact on the value of farm products. This hampers the sale of goods and prevents small producers from expanding their operations.

This study focuses on analysing the linkages between output growth, employment and poverty, at both the macro and micro levels. At the macro level, the linkage between poverty, in its income dimension, and output growth is conceptualised in terms of the average productivity of the employed work force, which in turn gets reflected in low

levels of real wages and low levels of earnings in self-employment. At the micro level of a household, the same linkage between poverty and employment operates through the type and low productivity of economic activities in which the earning members of a household are engaged, the low level of human capital of the members of the workforce, the dependency burden that limits participation in the workforce, and the mere availability of remunerative employment.

Section 2 provides an overview of the performance of the Bolivian economy in terms of economic growth and poverty reduction. The aim of this section is to analyze the growth patterns observed in the Bolivian economy, in order to identify the most noticeable structural changes that have occurred over the last two decades. For this purpose, national accounts data, published by the National Institute of Statistics (INE), is utilized. Besides, this section examines observed trends in poverty indicators over the last decades. This section argues that social indicators have improved over time as a result of various social programs aimed at reducing poverty undertaken by different administrations in Bolivia. The section concludes that observed improvements in social indicators are the result not only of government's social policies and programs, but also of stable economic growth, which has generated employment and income opportunities for the population.

Section 3 focuses on the analysis of the inter-linkage between economic growth, employment and poverty. The first part of this section is devoted to examining the employment-intensity of growth through the use of employment elasticities (aggregate as well as sectoral). The issue addressed here is whether the employment-intensity of growth reflects the level of development of the country and the imperative for the use of employment as a route out of poverty. In order to carry out this analysis at the macroeconomic level, data on macroeconomic growth is obtained from national accounts, while data on employment is obtained from household surveys and the population census carried out by INE. Additionally, a similar analysis is performed for the specific case of the manufacturing sector. For this purpose, the sources of data utilized are manufacturing firm surveys carried out by INE

In its second part, section 3 examines the changes which have occurred in the structure of employment and in the productivity of various sectors and occupations- especially of those where the poor are engaged in large numbers. The aim is to analyze to what extent economic growth is translated into growth of productive employment, and the extent to which the poor are moving to such high productivity employment. As real wages and earnings are the main channels through which the benefits of higher output growth and increased productivity are likely to reach the poor, trends in these variables are examined. Data utilized in this part came mainly from various national household surveys, carried out by INE.

Section 4 focuses on the analysis of the linkage between poverty, in its income dimension, and output growth at the micro level of a household. This inter-linkage operates through the type and low productivity of economic activities in which the earning members of a household are engaged, the low level of human capital of the members of the workforce, the dependency burden that limits participation in the workforce, and the mere availability of remunerative employment. For this purpose, an econometric PROBIT model is constructed in order to determine the impact of different variables on the probability of a household being poor.

Finally, section 5 offers some conclusions and policy implications that follow from the findings of the paper.

2. Economic Growth and Poverty

2.1 GDP growth

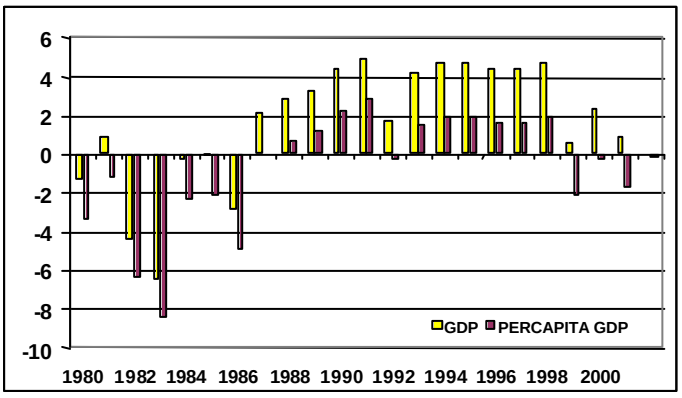
Bolivia is a landlocked country, and its poorly developed communications infrastructure limits its access to export markets. It is a segmented society, with insufficient investment, weak institutional capacity, and entrenched vested interests hampering the private sector. It is a good example of a country that has achieved successful stabilization and implemented innovative market reforms, yet made only limited progress in the fight against poverty.

During the last two decades, the Bolivian economy clearly exhibited a cyclical behaviour, determined by external and domestic shocks and changing domestic conditions. The country moved alternatively from a deep economic crisis at the beginning of the 1980s, to a period of recovery and growth during the second half of the 1980s and most of the 1990s, and to a period of deceleration of growth and economic crisis at the end of the 1990s and beginning of the 2000s.

External shocks, such as foreign capital inflows volatility, terms of trade deterioration and sizeable devaluation carried-out by neighbouring countries, had a significant impact on the country's economic growth, employment creation, income distribution and poverty incidence.

During the first half of the 1980s, the country experienced a serious economic crisis, as a result of the heavy external indebtedness acquired during the 1970s. Besides, changing climate conditions in 1983, brought about by the Corriente del Niño, resulted in severe droughts and floods that affected economic activity in different regions of the country. As a result, agricultural output fell by 6% that particular year and transport infrastructure was heavily damaged. During that period the economy suffered a deep contraction and a severe hyperinflationary process. Between 1980 and 1986, economic growth averaged –2.1% a year, and the accumulated drop of GDP amounted to 15%. Per-capita GDP decreased by 4.1% a year and the accumulated drop was as high as 29%.

GRAPH 1
RATES OF GROWTH OF GDP AND PER-CAPITA GDP



Source: National Institute of Statistics

In 1985, a new government took office and implemented a wide ranged set of reforms aimed at stabilizing the economy and restoring economic growth. The stabilization program focused on a sharp reduction of the non-financial public sector deficit and the strengthening of market forces. The policies included: trade liberalization, a massive

devaluation and unification of the exchange rate, increases in public sector prices (in particular those of domestic petroleum products), and reductions in government expenditures to levels that could be financed by available funds. As a result of the policies implemented, inflation was reduced from 25.000% a year in 1985 to 16% in 1989. From 1987 onwards, economic growth was positive averaging 3.2% p.a. whilst per capita GDP grew by 1% p.a.

During the 1990s, the reform process was consolidated and deepened by the successive governments. Additional structural reforms were implemented, including the privatisation of state enterprises, pension reforms, decentralization of public administration and education reforms. Social reforms were introduced at the same time, notably the education, health and pension reforms, the basic sanitation and social infrastructure programs, citizen participation, and decentralization of government administration. During most of the decade, economic growth stabilized. GDP growth rate averaged 4.4% a year between 1991 and 1998 and per-capita income increased on average by 1.7% a year.

By the end of the decade however, economic growth slowed down again as a result of shocks brought about by the international financial crisis. GDP growth decreased to 0.43% in 1999. The yearly GDP growth between 1999 and 2002 averaged only 1.6% and per-capita GDP decreased on average by 1.1% a year during this period. Although inflation was maintained very low, the economy faced an increased fiscal deficit and a severe credit crunch in the financial sector.

2.2 Sectoral growth, structural changes and employment

The cyclical behaviour followed by the Bolivian economy as described above led to an uneven growth pattern at a sectoral level (see Table 1), producing in turn a structural change in the Bolivian economy.

Table 1: SECTORAL GROWTH IN SELECTED PERIODS (annual average percent changes)

	1980-1986	1987-1990	1991-1998	1999-2001	1980-2001
AGRICULTURE	0,89	2,32	3,08	2,44	2,22
HYDROCARBONS	-3,41	3,47	5,65	6,33	2,74
MINING	-13,14	16,13	2,29	-2,75	-0,20
MANUFACTURING	-4,17	3,65	3,82	1,93	1,24
FOOD, BEVERAGE AND TOBACCO	-0,29	4,28	4,61	3,47	2,98
OTHER INDUSTRIES	-6,51	3,21	3,15	0,46	0,02
ELECTRICITY, GAS AND WATER	3,20	5,90	7,22	2,23	5,11
CONSTRUCTION AND PUBLIC WORKS	-5,75	4,90	9,99	-11,98	1,38
COMMERCE	-2,86	3,73	3,64	1,00	1,42
TRANSPORT AND COMMUNICATION	4,58	4,52	6,33	1,10	4,74
FINANCIAL SERVICES, INSSURANCE AND SERVICES TO FIRMS	-1,93	1,98	8,15	4,21	3,29
COMMUNITY, SOCIAL AND PERSONAL SERVICES	-3,44	2,54	3,95	3,11	1,45
RESTAURANTS AND HOTELS	-2,47	-0,27	3,57	1,88	0,87
PUBLIC ADMINISTRATION	-3,43	1,98	2,88	2,15	0,80
TOTAL GDP	**-2,03**	**3,45**	**4,36**	**1,34**	**1,93**

Source: National Institute of Statistics

During the 1980-1986 period, mining experienced the largest reductions in activity, exhibiting a yearly average drop in output equal to 13%. In 1985, the collapse in the international tin market meant that most Bolivian mines became unprofitable and their operations had to be discontinued. Comibol, the state mining company, cut its labour force from 30.000 to 7.000. Other sectors that were deeply affected during the economic crisis of the early 80s were: construction and public works, experiencing output contractions of 5.75% a year on average, manufacturing (-4.17%), hydrocarbons (-3.41%) and activities in the services sector, such as commerce (-2.86%), community, social and personal services (-3.44%) and public administration (-3.43%).

After the stabilization program was implemented in 1985, sectoral output experienced an across-the-board recovery. Mining production exhibited an average output growth equal to 16% a year during the 1987-1990 period. Other sectors that presented fast growth during that period were electricity, gas and water (5.9%), construction (4.9%), transport and communication (4.52%), manufacturing (3.65%) and hydrocarbons (3.47%). During this period, sectors were adjusting to the large relative-price shifts brought about by the structural reforms, such as the opening up to foreign trade and the liberalization of domestic prices.

During the 1990s, the economy was much better adjusted to the new economic conditions, and output experienced the fastest growth rates of the whole period under analysis. Non-tradable sectors exhibited the highest growth rates, such as construction (10% on average), electricity (7.2%), financial services (8.15%) and transport and communication (6.33%). Tradable sectors showed more moderate growth. That was the case of agriculture (3.08%), hydrocarbons (5.65%), mining (2.29%) and manufacturing (3.82%).

At the end of the 1990s, when Bolivia experienced the negative effects of the international crisis, activity slowed down considerably. The only sector that exhibited fast growth was hydrocarbons (6.33% a year on average) because of the increased volumes of natural gas exported to Brazil starting from 2000. Construction presented the largest contractions in output, decreasing on average by 11.9% a year, due to the significant drop which occurred in private investment. Other sectors presenting low albeit positive growth rates were agriculture (2.44%), manufacturing (1.93%), commerce (1%), transport and communication (1.1%) and public administration (2.15%). Mining exhibited negative growth averaging –2.75% a year, due to depressed prices observed in international markets for minerals.

Overall, during the two decades under analysis the sectors presenting a more consistent growth pattern were electricity, gas and water, transport and communication, and financial and firm services. The sectors that exhibited a more uneven pattern were mining, manufacturing, construction, public administration and other services.

Table 2
GDP STRUCTURE IN SELECTED PERIODS
(Percentage of total GDP)

	1980	1987	1991	1999	2001
AGRICULTURE	14,11	17,28	17,18	14,66	14,94
HYDROCARBONS	4,98	4,63	4,41	4,66	5,65
MINING	8,28	4,05	6,25	4,96	4,65
MANUFACTURING	19,89	18,15	18,10	17,34	17,34
FOOD, BEVERAGE AND TOBACCO	6,89	8,03	8,43	8,33	8,73
OTHER INDUSTRIES	13,00	10,11	9,67	9,01	8,61
ELECTRICITY, GAS AND WATER	1,10	1,58	1,75	2,15	2,14
CONSTRUCTION AND PUBLIC WORKS	3,78	3,13	3,31	3,91	3,11
COMMERCE	9,55	9,47	9,63	8,68	8,71
TRANSPORT AND COMMUNICATION	6,26	9,63	10,11	11,12	11,26
FINANCIAL SERVICES, INSSURANCE AND SERVICES TO FIRMS	10,96	11,58	10,72	15,09	14,57
COMMUNITY, SOCIAL AND PERSONAL SERVICES	5,13	4,95	4,68	4,64	4,75
RESTAURANTS AND HOTELS	4,00	4,08	3,52	3,28	3,27
PUBLIC ADMINISTRATION	11,96	11,47	10,32	9,50	9,63
TOTAL GDP	100,00	100,00	100,00	100,00	100,00

Source: National Institute of Statistics

The sectoral trends described above brought about a number of changes in the Bolivian productive structure. Overall, the economy suffered a process of tertiarization, as the sectors that increased their share in GDP were located in the service sector, such as, electricity, gas and water, transport and communication, financial and firm services. The only commodity-producing sector that increased its share in GDP was hydrocarbons. Other goods-producing sectors such as agriculture, mining, manufacturing and construction decreased their share of total GDP. It is also worth mentioning the significant reduction observed in the share of Public Administration in total GDP. The drastic process of public sector restructuring that occurred after 1985 explains this trend.

2.3 Poverty indicators and social policies

Bolivia is one of the poorest countries in Latin America, with a GDP per capita of around US$1,000 and social indicators similar to Sub-Saharan Africa countries. About two-thirds of the Bolivian population is poor, with low levels of education, health and nutrition. The average schooling completed is less than seven years, infant mortality stands at 69 per thousand live births and 10 percent of the children under five are malnourished.

The reform process implemented in the Bolivian economy in the last 18 years has produced some positive result in terms of stable economic growth, macroeconomic stability and financial deepening. The dramatic increases in poverty during the early 1980s have been somehow reversed. The reform process however has produced far less favourable results in terms of employment generation and poverty alleviation and Bolivia remains one of the poorest countries in Latin America as measured by most economic and social indicators.

Per capita income is one of the lowest in the Latin American region and has barely increased from US$ 561 in 1976 to US$ 922 in 2001. Poverty incidence is very high as measured by any standard. In 1996, 65% of the total population was considered as poor because their income levels were below a defined poverty line, equivalent to an amount required to purchase a minimum basket to satisfy basic needs[1]. The poverty incidence decreased between 1996 and 1999, but has increased again thereafter, up to 64% in 2001. The economic crisis of the late 1990s and early 2000s largely explains this trend. Income disparities are also deeply entrenched. In 1996 poverty incidence amongst the urban population was 56%, while among the rural population the incidence was as high as 81%. This situation has not changed significantly in 2001, when poverty incidence was 52% in urban areas and 80.1% in rural areas. Extreme poverty incidence is also very high. In 1997, 37.8% of the total population received incomes below an amount required to purchase a minimum basket to satisfy basic food requirements.

Bolivia performs very badly in other social indicators as well. Education indicators show that the illiteracy rate is very high, as 12.9% of the total population older than 15 years of age was considered illiterate in 2001. Besides, average years of schooling are relatively low for Latin American standards. In 2000, the average number of years of schooling amongst the population older than 19 years was 7.5 years. Furthermore, health indicators also portray a situation of generalized lack of access to basic services amongst the Bolivian population. Life expectancy was only 62.5 years in 2001 and infant mortality was as high as 60.6 per 100,000 live births.

Table 3
POVERTY INDICATORS

	Bolivia	Latin America & Caribe	Lower-middle-income
Most recent estimate (latest year available, 1995-01)			
Per capita income (US$)	950	3560	1240
Poverty (% of population below national poverty line)	60		
Urban population (% of totalpopulation)	64	76	46
Life expectancy at birth (years)	63	70	69
Infant mortality (per 1,000 live births)	61	29	33
Child malnutrition (% of children under 5)	7	9	11
Access to an improved water source (% of population)	75	85	80
Illiteracy (% of population age 15+)	14	11	15
Gross primary enrollement (% of school-age population)	98	130	107
Male	99	131	107
Female	96	128	107

Source : World Bank 2003

[1] The consumption-based poverty line calculated by INE and UDAPE, which reflects the expenditure necessary to buy a "minimum food basket" and other necessities, was US$ 56.11 in 1999 and US$ 52.96 in 2000, in the case of the urban area, and US$ 40.11 and US$38.40 in 1999 and 2000 respectively in the case of the rural area. Extreme poverty is defined as the proportion of households with income below the level required to purchase the minimum food basket. An Engel coefficient of 0.55 was used to derive the urban poverty line in urban areas. In rural areas, the food budget share among the poor is approximately 75%.

Although most social indicators show that poverty is widespread amongst the Bolivian population, the relatively long period of macroeconomic stability and continuity of structural reform policies applied by the successive democratically elected governments has yielded some positive results in terms of poverty reduction. Social indicators have generally improved over the past two decades. The Illiteracy rate for instance has been reduced from 36.8% in 1976 to 12.9% in 2001; the average years of schooling has increased from 3.3 years in 1976 to 7.5 years in 2000; life expectancy increased from 58.7 years in 1991 to 62.5 years in 2001; and infant mortality decreased from 151 per 100,000 live births in 1976 to 60.6 in 2000. Furthermore, the percentage of households without basic need satisfaction decreased from 70.2% in 1992 to 58.6% in 2001[2]. Despite this progress, most social and poverty indicators in Bolivia remain weaker than the average for Latin America and are close to the levels observed in Sub-Sahara Africa. Social conditions are especially acute in rural areas, where 90 percent of the population still lives in poverty.

Table 4
INEQUALITY FOR PER CAPITA INCOME
(Income shares and Gini coefficients)

INCOMES SHARES IN 1997	National	Main Cities	Other Urban	Rural
Income share in botton quintile	2,02	3,87	4,04	1,59
Income share in second quintile	6,23	7,52	7,87	4,98
Income share in third quintile	10,96	11,41	12,73	10,16
Income share in fourth quintile	18,65	18,90	20,19	18,08
Income share in top quintile	62,15	58,28	55,17	65,18
GINI COEFFICIENT	**1996**	**1997**	**1999**	**2000**
BOLIVIA	0,58	0,59	0,55	0,60
URBAN AREA	0,52	0,54	0,51	0,57
RURAL AREA	0,62	0,68	0,44	0,45

Source : World Bank, National Institute of Statistics
All measures are based on per capita income, except 1999 and 2000 in rural areas, where per capita consumption is used instead. This may partly explain the large drop in rural inequality

Poverty levels in Bolivia are higher than expected for a low-middle income country with a per capita income of nearly $1,000. There is a threefold explanation of this phenomenon:

First, there is a high degree of inequality in income distribution, especially between urban and rural areas. Table 4 provides income shares by quintiles to support this argument. In 1997, at the national level, the bottom quintile obtained 2 percent of total income, while the top quintile obtained 62 percent of total income. This suggests the extremely high degree at income inequality existing in Bolivia, which tends to be very high by any standard. Table 4 also provides the Gini coefficients for years 1996, 1997, 1999 and 2000. They also indicate a high degree of income inequality at the national level, as well as in urban and rural areas. The Gini coefficients also capture the existing inequality between urban and rural areas, because in all years national level Gini coefficients are higher than those measuring urban inequality.

[2] The degree of basic needs un-satisfaction is measured by the Unsatisfied Basic Needs Index (NBI). The NBI captures the degree of satisfaction of basic needs with regards to minimum standards for quality and access to housing, water supply and sanitation, energy, education and health. It measures poverty as the share of households with unsatisfied basic needs and other basic necessities.

Second, high degrees of poverty in Bolivia can also be explained in terms of the large inequality existing between urban and rural households in the access to basic services, such as health, education, sanitation, drinking water supply, housing, etc. The Basic Needs Satisfaction indicators presented in Table 6 show that in 1992 94 percent of rural households suffered from unsatisfied basic needs. This indicator was much lower in the case of urban households (51.5 percent). In 2001 there was a significant drop in the share of urban households presenting unsatisfied basic needs (39 percent). Conversely, the share of rural households with unsatisfied basic needs stood above 90 percent.

Third, there is a large productivity gap between activities located in the urban and rural areas. Table 5 shows that the agricultural sector, which consists predominantly of rural activities presented labour productivity levels which were a third of the average labour productivity for the economy as a whole. The highest labour-productivity sectors in the urban areas, such as mining and electricity, had productivity levels twenty times higher than those observed in the agricultural sector.

Table 5
LABOUR PRODUCTIVITY ACROSS ACTIVITIES
(Constant Bolivianos in 1990 per worker)

	1997	1999	2001
Agriculture, Hunting and Fishing	2.033	2.133	1.994
Mining	31.339	38.231	47.904
Manufacturing	8.755	8.761	11.119
Electricity, Water and Gas	38.137	56.425	43.060
Construction	3.879	3.855	3.721
Commerce and Restaurants	3.860	3.428	3.763
Transport and Communication	12.868	12.865	14.303
Financial and Firm Services	31.452	34.762	26.543
Community and Personal Services	5.671	6.014	6.304
Total	5.735	5.782	5.899

Source : Own estimates based on data published by the National Institute of Statistics

In the last 15 years, different governments have applied social policies aimed at alleviating poverty among the most vulnerable groups. The main social reforms introduced have been: education, health and pension reforms, the basic sanitation and social infrastructure programs, citizen participation, decentralization of government administration, and more recently, a universal mother and child health insurance. Social policies introduced during the 1990s promoted increased investment in human resources, and particularly in the areas of education, health and basic sanitation. Decentralization and Popular Participation Initiatives helped to bring about a redistribution of resources towards poor areas, establishing social control mechanisms, promoting the strengthening of institutions for the decentralized levels of administration, and encouraging greater participation by society.

Social investment was accompanied by a greater need for current expenditures in social sectors. From 1995 to 1999, social expenditures increased from 12.3 percent of GDP to 16.5 percent of GDP. However, the level of social expenditure in Bolivia (35 percent) is still less than the average for Latin America as a whole (41 percent).

In 1997, Bolivia benefited from the Highly Indebted Poor Countries (HIPC) initiative, which represented a significant relief for the country's external debt service. In 2001 the country entered the HIPC II program, allowing for additional debt service relief. The HIPC II however, imposed certain conditions on the use of resources made available to the country. The use of these resources were circumscribed within the Bolivian Poverty Reduction Strategy (BPRS), which constitutes a framework for focusing policies on poverty reduction and proposes actions to aid the poor (Gobierno de Bolivia, 2001).

The efforts made by successive governments and other organizations in the past decade have resulted in an improvement in key social indicators. Besides, steady economic growth observed in the past decade was paramount in explaining the success of poverty reduction programs. Considering that the most effective and sustainable way to fight poverty is to attain sustainable growth, which in turn creates employment and income opportunities for the population, the slowdown in economic activity which occurred at the end of the 1990s and the beginning of 2000, led to a deterioration in some social indicators. For instance, per capita income has fallen in the past 4 years, unemployment has increased and real incomes have decreased. Moreover, the economic crisis has caused a reduction in fiscal incomes, jeopardizing in turn the continuity of the public sector's social programs aimed at alleviating poverty. In the medium term this could cause a reversal in the past improvements attained in other social indicators.

Table 6
BOLIVIA: POVERTY INDICATORS TRENDS

	1976	1991	1992	1994	1996	1997	1999	2000	2001
DEMOGRAPHIC VARIABLES									
Total Population (million people)	4,873	6,824	6,983	7,312	7,662	7,847	8,229	8,428	8,631
Rate of Growth of Population (% change)	2,05	2,11	2,11	2,74	2,74	2,74	2,74	2,74	2,74
INCOME INDICATORS									
Per Capita Income (current US$)	561	783	806	816	964	1,009	1,005	990	922
Poverty Incidence (percentage)					65,0	58,0	56,0	60,0	64,0
Urban Areas					56,0	52,0	44,0	49,0	52,5
Rural Areas					81,0	72,0	75,0	78,0	80,1
Extreme Poverty Incidence (percentage)						37,8	35,9	39,8	37,0
Urban Areas									25,9
Rural Areas									55,5
EDUCATION INDICATORS									
Illiteracy Rate (percentage)	36,8		20,0		16,6	15,2		13,8	12,9
Urban Area	15,6		11,8		7,2	7,0		6,3	6,2
Rural Area	53,2		27,7		32,2	29,7		29,0	25,2
Average Years of Schooling (years)	3,3		4,4		6,7	7,0	7,3	7,5	
Urban Area					8,8	9,0	9,4	9,5	
Rural Area					3,3	2,7	3,3	3,7	
BASIC NEEDS SATISFACTION									
Population with Unsatisfied Basic Needs	85,5	70,6	70,2		60,3	57,3	55,1	55,5	58,6
Urban Area			51,5		38,7	36,2	32,6	34,9	39,0
Rural Area			94,2		91,0	89,1	93,0	91,3	90,8
HEALTH INDICATORS									
Life Expectancy (years)		58,7	59,1	60,0	60,8	61,2	61,7	62,1	62,5
Infant Mortality (per 100,000 live births)	151,0		75,0	75,0	68,5	66,6	62,6	60,6	
Urban Area				58					
Rural Area				94					

Source : National Institute of Statistics

3. The Inter-linkage between Economic Growth, Employment and Poverty

Labour market dynamics depends on the behaviour of labour demand and labour supply. This section mostly focuses on analysing the determinants of labour demand and on the employment-creating capacity of macroeconomic and sectoral growth. However, in its part, this section briefly discusses some aspects that determine labour supply behaviour. In this way, a more complete and much clearer perspective of the functioning of the Bolivian labour market is obtained.

3.1 Factors determining labour supply

As stated before, this section analyses the factors that determine labour supply. The analysis focuses on aspects such as demographic trends, migration and participation of the population in the labour market.

Demographic trends and migration

Demographic factors and migration have had a significant impact on the size and structure of labour supply. Bolivia has a relatively high rate of population growth and it has increased over time. Between 1950 and 1976, the estimated growth of the Bolivian population was 2.05%. It increased to 2.11% in the period 1976-1992, and to 2.74% in the period 1992-2001. This latest figure represents an increase in the population by about 200 thousand persons a year during the first decade of the 2000s, which eventually will exert pressure on the labour market.

Migration constitutes another major driving force in determining labour supply. Overtime, there has been a clear process of urbanization of the Bolivian population. In 1985, most of the Bolivian people lived in the rural areas (50.6% of total population). Between 1985 and 2001, the growth rate of the urban population was about 4.08% a year, while that of the rural population was very close to zero or even negative. The rate of growth of the population in the main capital cities was about 3.7% a year, which was smaller than the rate of growth of the urban population. As a result, in 2001 65.6% of the total population lived in the urban areas, and only 34.9% lived in the rural areas.

Table 7
BOLIVIAN POPULATION STRUCTURE

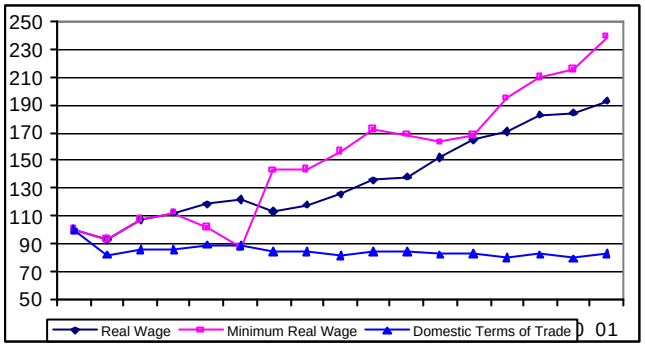
	1985	1989	1993	1997	2001	Yearly Average Growth Rate
Number of People						
Total Population	5.964.223	6.521.464	7.145.252	7.846.679	8.630.904	2,34
Urban	2.946.216	3.487.845	4.110.005	4.822.513	5.658.540	4,08
Capital Cities	2.265.142	2.476.123	2.997.955	3.462.880	3.999.905	3,67
Rural	3.018.007	3.033.618	3.035.247	3.024.167	3.013.127	-0,09
Percentage						
Total Population	100,0	100,0	100,0	100,0	100,0	
Urban	49,4	53,5	57,5	61,5	65,6	
Capital Cities	38,0	38,0	42,0	44,1	46,3	
Rural	50,6	46,5	42,5	38,5	34,9	

Source: National Institute of Statistics

Graph 2

REAL WAGE AND DOMESTIC TERMS OF TRADE

(Index : Base Year 1985 = 100)



A strong process of urban migration explains this trend. According to the World Bank, migration is closely linked to the labour markets. Among males who migrated, 47% did so for work-related reasons. Among female "family reasons" is the most quoted reason for moving. The increased urbanization is explained in terms of income differentials received by workers in urban vis-à-vis rural occupations. Average real wages in the urban area increased by 92% between 1985 and 2001. Even the legal minimum wage increased in real terms by 139% during the same period. Domestic terms of trade between rural and urban sectors on the other hand, measured by the ratio between traditional agriculture prices vis-à-vis consumer prices in the urban area, deteriorated by 17%.

Access to basic services, such as education, health, electricity, water and sanitation, etc., is also important in explaining migration. The limited access that rural population has to these and other basic services, compared to the much higher access by urban population, exert a strong incentive to rural habitants to migrate to the cities.

Migration is also favoured by relatively easy access to the urban labour market by recent migrants. According to the World Bank (1996), generally migrants tend to be young, averaging 32 years of age. The unemployment rate amongst migrants is higher than amongst the rest of the population. However, once working, wages and participation of migrants are similar to the rest of the urban population, indicating little difference in barriers to entry in terms of wages. In self-employment, wages earned by non-recent migrants tend to be much higher than those received by recent migrants (about 2.7 times).

Participation in the labour market

Another factor that played a key role in shaping labour supply was the observed increase in the participation rate. The global participation rate of the population in the labour market, for the main capital cities, augmented from 43.7% in 1985 to 56.1% in 2000. The largest increases occurred in the second half of the 1980s, when the participation rate went up to 52.8%. This is explained by the sharp increase that occurred in the female participation rate after the implementation of the New Economic Policy in 1985. Women's global participation rate went up from 30% to 43.8% of the total female population of working age (i.e. more than 10 years of age in the Bolivian case). This is a reflection of the increased need of household members to participate in the labour market, as a means to expand income opportunities for the household, once the market liberalization program was introduced.

As a result of this sizeable increase in the number of female participants in the labour market, the open unemployment rate among women increased from 4.7% in 1985 to 11% in 1989. The failure of new female labour market entrants to find job opportunities can be partially explained by their lack of previous working experience and their poor level of human capital in terms of education and other skills demanded by the market. During the 1990s, the participation rate among women stood at a relatively stable level and the unemployment decreased as the economy experienced much higher growth rates. Unemployment went down to 5,3% in 1993 and to 4.4% in 1997. In 2000, when the economic crisis broke-out unemployment increased again, this time to 8.9% of the female labour force.

The global participation rate among men presented a less pronounced increase after the year of the stabilization program. It went up from 58.5% in 1985 to 62.7% in 1989. As a result, open unemployment among men increased from 6.8% of male population in 1985 to 9.9% in 1989. As in the case of females, unemployment among men decreased as the economy entered the relatively stable growth process that took place during most of the 1990s. In 2000, when the Bolivian economy experienced the slowdown in economic activity, unemployment increased to 6.2%.

Table 8
LABOUR INDICATORS FOR MAIN CAPITAL CITIES
(Percentages)

	1985	1989	1993	1997	2000
TOTAL					
Global Participation rate	43,7	52,8	52,6	52,5	56,1
Gross Participation Rate	32,9	39,4	39,1	40,6	41,5
Employment Rate	94,0	89,6	94,0	95,6	92,6
Open Unemployment Rate	6,0	10,4	6,0	4,4	7,4
MALES					
Global Participation rate	58,5	62,7	63,0	62,3	65,5
Gross Participation Rate	43,3	46,0	46,1	47,6	47,6
Employment Rate	93,2	90,1	93,5	95,5	93,8
Open Unemployment Rate	6,8	9,9	6,5	4,5	6,2
FEMALES					
Global Participation rate	30,0	43,8	43,2	43,4	47,6
Gross Participation Rate	22,9	33,2	32,7	33,9	35,9
Employment Rate	95,3	89,0	94,7	95,6	91,1
Open Unemployment Rate	4,7	11,0	5,3	4,4	8,9

Source : National Institute of Statistics

3.2 Employment-intensity of growth

The differentiated growth patterns followed by different sectors have had a varied impact on employment creation, depending on the growth patterns themselves and on the technology used in their productive process. As is the case in most developing countries, the Bolivian economy is characterized by the existence of differentiated productive technologies within the same sector, coexisting productive units using capital-intensive technologies with units that are more labour intensive.

The bulk of the productive sectors that comprise the Bolivian economy have a dual structure, where modern productive units, mostly located in the formal sector, use capital intensive technology, hire paid workers, and produce for export markets; coexisting with other small scale units, located in the informal sector, using labour intensive technologies, relying on unpaid family workers, selling their production in the domestic informal markets and following household subsistence strategies.

Table 9
Sectoral Growth and Employment Creation Capacity

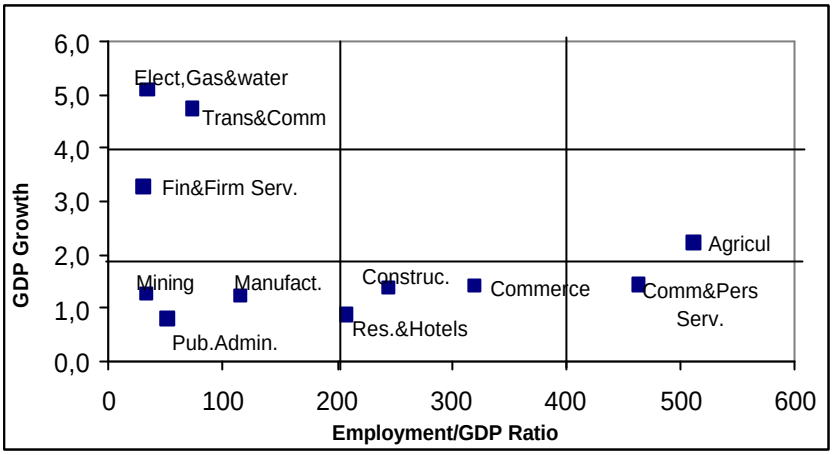
	Employment/ GDP Ratio * 1996	Average GDP Growth 1980-2001
Agriculture	511	2,22
Community and Personal Services	463	1,45
Commerce	319	1,42
Construction	244	1,38
Reastaurants and Hotels	208	0,87
Manufacturing	115	1,24
Transport and Communication	73	4,74
Public Administration	51	0,80
Electricity,Gas and Water	34	5,11
Mining	33	1,27
Financial and Firm Services	30	3,29

* Expressed in number of workers per unit of product measured in million of constant Bolivianos in 1990

Source: National Institute of Statistics

The first column of Table 9 presents labour-output ratios calculated for different sectors of the Bolivian economy for year 1996. The ratio measures the number of workers employed in each sector per unit of product expressed in millions of constant Bolivianos in 1990. Agriculture shows the highest labour/product ratio evidencing the widespread existence of small-scale, peasant-type labour-intensive productive units. Other activities with relatively high employment creation capacity are community and personal services and commerce. Activities with an intermediate employment creation capacity are construction, restaurants and hotels, and manufacturing. Finally, activities with low employment creation capacity are transport and communication, public administration, electricity, gas and water, mining and hydrocarbons, and financial and firm services.

Graph 3
Sectoral Growth and Employment Creation Capacity

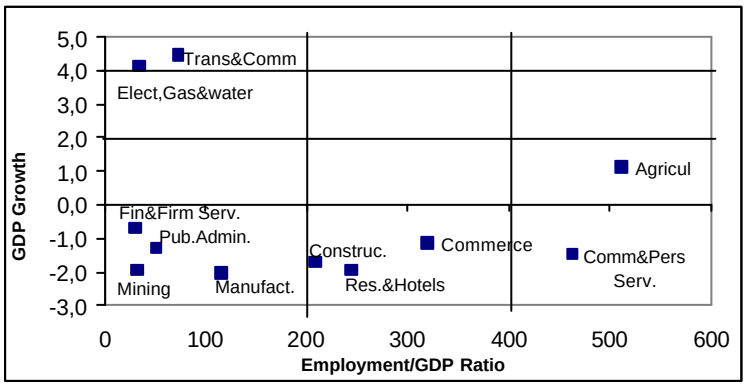


Source: National Institute of Statistics

Based on the classification presented above, Graph 3 shows that sectoral growth patterns observed in the Bolivian economy over the last two decades have not been particularly employment intensive. The sectors with the highest employment-output ratios, like agriculture and commerce and personal services presented low average growth rates—below 2%— over the two decades under analysis. Likewise, the sectors with intermediate employment creating capacities, such as construction, commerce and restaurants and hotels, also experienced low average growth rates. Conversely, sectors with low employment creating capacity, such as electricity, gas and water, and transport and communication exhibited the highest growth rates (above 4% a year on average). Financial and firms activities, which have an intermediate employment creating capacity, also experienced intermediate average growth—3.4% on average. Finally, three sectors that have low employment-output ratios—mining, manufacturing and public administration—exhibited low average growth rates over the period studied.

Sectoral growth and employment during the 1980s and 1990s

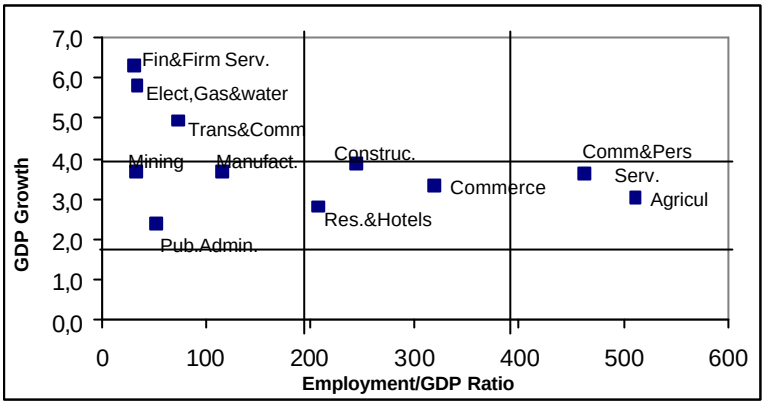
Graph 4
Growth and employment creation during the 1980s



The 1980s was clearly a decade that did not favour the creation of jobs in the Bolivian economy. During most of the decade, almost all economic activities exhibited negative growth rates. Only agriculture, transport and communication, and electricity, gas and water grew at positive rates. Furthermore, those sectors with the smallest employment-

creation coefficients, such as transport and communication, and electricity, gas and water, were the fastest growing sectors with average growth rates above 4% a year. Agriculture, which has a high employment coefficient, only presented a moderate average growth rate (1.1% a year on average).

Graph 5
Growth and employment creation during the 1990s



During the 1990s on the other hand, sectoral growth rates stood at much higher levels. However, growth did not present an employment-creating bias. The fastest growing sectors during that decade—averaging growth rates above 4% a year—were those with the smallest employment/GDP ratios. These sectors were: financial and firm services; electricity, gas and water; and transport and communication. Sectors with the highest employment-creation capacity, such as agriculture, and communal and personal services exhibited only moderate growth rates (below 4% a year on average).

3.3 Employment, productivity, real wages earnings and poverty

As it was concluded in the previous section, economic growth in Bolivia was not specifically favourable to the creation of employment. The 1980s was characterized by relatively low growth rates of GDP, thus employment creation was almost negligible during that decade. During the 1990s on the other hand, economic growth recovered, but the fastest growing sectors were relatively less labour intensive.

Table 10 shows that the overall employment growth rate at the end of the 1980s stood at 1.4% a year on average. In that period, the economy had not yet adjusted to the new economic conditions brought about by the stabilization program and structural reforms. Although most economic activities exhibited positive growth rates during that period, there were some sectors that experienced negative growth rates in employment. That was the case of mining, electricity, gas and water, commerce and restaurants.

The 1990s presented more favourable conditions in terms of job creation. Between 1992 and 1997 employment expanded at an average growth rate of 3.5% a year. Employment in most economic activities, in the primary, secondary and tertiary sectors, exhibited high positive growth rates.

Table 10
LABOUR-FORCE GROWTH RATES PER ACTIVITY[3]
(Annual average percent changes)

	88-92	92-97	97-99	99-01
Agriculture, Hunting and Fishing	2,15	2,42	-3,36	12,19
Mining	-5,79	-2,68	-9,12	-12,11
Manufacturing	4,44	4,90	2,67	-18,95
Electricity, Water and Gas	-9,96	13,25	-14,81	33,62
Construction	3,12	0,91	6,58	-15,25
Commerce and Restaurants	-3,68	15,03	7,55	-6,20
Transport and Communication	0,90	0,99	3,07	-6,36
Financial and Firm Services	12,69	8,18	7,40	30,09
Community and Personal Services	1,17	-2,18	0,22	-0,24
Total	1,40	3,50	0,76	0,83

Source : Own estimates based on data published by the National Institute of Statistics

When the economic crisis broke-out at the end of the 1990's, the economy lost its dynamics in terms of job creation. Between 1997 and 1999 employment growth decreased to an annual average rate of 0.76% and to 0.83% during the period of 1999-2001. The slow-down experienced by the Bolivian economy brought-about several job losses and thus unemployment increased significantly. From 1999 to 2001 employment in various economic activities, such as mining, manufacturing, construction, transport and communication, and commerce and restaurants experienced high negative growth rates.

The above patterns observed in terms of employment creation, brought about some interesting changes in the employment structure. Mining for instance, decreased its share in total employment from 3.2% in 1988 to only 1.3% in 2001. The manufacturing sector increased it share in employment during the 1990s, from 9% in 1988 to 11.4% in 1999. However, manufacturing's share in employment decreased again at the end of the 1990s and beginning of the 2000s. Construction also presented the same pattern as manufacturing, increasing its share in total employment between 1988 and 1999, and decreasing its share between 1999 and 2001.

It is worthwhile mentioning that commerce and restaurants significantly increased their share in employment over time. In 1988 this sector comprised 12.9% of employment and by 2001 its share had increased to 18.8% of total employment. This was caused by the large amount of workers who were engaged in low-paid, small-scale commerce and

[3] Employment statistics in Bolivia are fragmented and incomplete. Only starting from 1996, a systematic and reliable employment data is being compiled for both, urban and rural sectors. Previous to this year, rural employment figures can be obtained for years 1976 and 1992 only, when census on population were carried out at the national level, and for 1988, when a national household survey was implemented. Besides, there are some consistency problems in the measurement of employment. The most significant being that previous to 1996, family workers were not included as an employment category, and thus they were not counted in as part of the employed population. This result in very high growth employment rates in sectors where family workers are concentrated, e.g. agriculture, manufacturing and commerce. This inconsistency had to be corrected in order to calculate the employment growth rates presented in this paper, and therefore the other indicators utilized, namely: labour productivity growth and labour elasticities.

related services activities, as a means of increasing income opportunities of poor households.

Agriculture is still the sector that has the largest share in total employment. Although this share is expected to decrease as long as the rapid process of urbanization of the Bolivian population continues. The share of agriculture in total employment has stood between 43% and 45% during the period under analysis.

Table 11
LABOUR-FORCE DISTRIBUTION ACROSS PRODUCTIVE ACTIVITIES
(Percentage structure)

	1988	1992	1997	1999	2001
Agriculture, Hunting and Fishing	43,3	44,6	43,2	39,7	44,2
Mining	3,2	2,4	1,8	1,5	1,3
Manufacturing	9,0	10,1	11,0	11,4	9,2
Electricity, Water and Gas	0,4	0,3	0,3	0,2	0,3
Construction	5,5	5,9	5,2	5,9	4,9
Commerce and Restaurants	12,9	10,5	17,7	20,2	18,8
Transport and Communication	5,4	5,3	4,8	5,0	4,6
Financial and Firm Services	1,6	2,5	2,2	2,5	3,2
Community and Personal Services	18,7	18,5	13,7	13,6	13,5
Total	100,0	100,0	100,0	100,0	100,0

Source : Own estimates based on data published by the National Institute of Statistics
1992 : National Census of Population and Housing
1988, 1997,1999 and 2001 : Household Survey

The growth patterns observed in employment and economic activity indicate that during the final years in the 1980s and most of the 1990s, economic growth had a moderate impact in terms of employment creation. At the end of the 1990s and the beginning of the 2000s, economic growth slowed down and employment creation was clearly insufficient. A summary indicator of employment growth, that is associated with a given output growth, is provided by the employment elasticity of output. A high employment intensity of growth means high employment elasticity. It needs to be noted in this context that employment elasticity reflects the inverse of labour productivity. An elasticity higher than unity implies a decline in productivity, as employment growth is higher than output growth. Conversely, a lower than unity elasticity means that employment expansion is taking place along with an increase in productivity, since employment growth is lower than output growth. A rise in the productivity would lead to a reduction in the employment elasticity. Therefore, as in the case of Bolivia, raising the employment elasticity in individual activities cannot always be welcomed as that would mean a lowering of the productivity in an economy, that is already characterized by widespread low-productivity employment.

A special case occurs when sectors present negative elasticities. In this case there are two possibilities. First, the negative elasticity could be the result of increasing employment and decreasing output. In this case productivity is certainly decreasing. Second, negative elasticity could be the result of increasing output and decreasing unemployment. In this case there is an increase in productivity. This case occurs for instance in sectors that have undergone a process of restructuring in order to become more competitive.

Table 12 shows the employment elasticity of output for the economy as a whole as well as for the different sectors. Likewise, Table 13 presents productivity growth rates for the economy as a whole and for various activity sectors. The analysis of labour elasticities of output confirms the hypothesis that growth in the Bolivian economy was not favourable in terms of job creation. During the period 1988-1992, employment elasticities stood below unity (0.4), evidencing a very weak employment intensity of growth during that specific period. Employment growth was very low in employment intensive sectors, such as construction, community and personal services. Other labour intensive sectors presented large employment decreases, such as mining and commerce. During this period, total productivity for the economy as a whole increased by 2.4% a year on average. Productivity increases were particularly high in sectors presenting large employment contractions, such as mining, electricity and commerce.

During the 1988-1992 period, sectors presenting elasticities higher than unity were agriculture (1.1) and financial services (4.1). Thus, these sectors also experienced decreases in productivity. Manufacturing showed an elasticity equal to unity, and thus productivity stood relatively constant. Those sectors that exhibited elasticities lower than unity were construction (0.5), transport and communication (0.1) and community and personal services (0.6). These sectors presented increases in productivity. There were three sectors that presented negative elasticities: mining (-0.9), electricity, gas and water (-1.7) and commerce and restaurants (-0.7). In all three cases the negative elasticities were the result of increasing output and decreasing employment. Thus, productivity tended to rise in all these cases.

Table 12
SECTORAL EMPLOYMENT ARC-ELASTICITIES OF OUTPUT

	88-92	92-97	97-99	99-01
Agriculture, Hunting and Fishing	1,1	0,5	3,3	5,1
Mining	-0,9	-0,7	-24,4	-2,4
Manufacturing	1,0	1,1	1,0	-13,3
Electricity, Water and Gas	-1,7	1,5	-4,1	34,3
Construction	0,5	0,2	1,1	1,6
Commerce and Restaurants	-0,7	4,1	5,6	-4,2
Transport and Communication	0,1	0,2	1,0	-3,1
Financial and Firm Services	4,1	1,1	0,6	-90,2
Community and Personal Services	0,6	-0,7	0,1	-0,1
Total	0,4	0,8	0,7	0,6

Source : Own estimates based on data published by the National Institute of Statistics

Table 13
LABOUR PRODUCTIVITY GROWTH BY ECONOMIC ACTIVITY
(Annual Average Percent Changes)

	88-92	92-97	97-99	99-01
Agriculture, Hunting and Fishing	-0,1	2,2	2,4	-3,3
Mining	12,8	6,9	10,4	11,9
Manufacturing	-0,1	-0,3	0,0	12,7
Electricity, Water and Gas	17,5	-4,1	21,6	-12,6
Construction	3,1	4,4	-0,3	-1,8
Commerce and Restaurants	9,0	-9,8	-5,8	4,8
Transport and Communication	5,1	5,4	0,0	5,4
Financial and Firm Services	-8,5	-0,7	5,1	-12,6
Community and Personal Services	0,9	5,5	3,0	2,4
Total	2,4	0,8	0,4	1,0

Source : Own estimates based on data published by the National Institute of Statistics

From 1992 to 1997, a period that is characterized by relatively high economic growth, the employment elasticity for the economy as a whole increased to 0.8. This, coupled with rapid economic growth, resulted in an increased employment growth rate and productivity gains. Higher employment growth occurred due to employment creation that took place in the commerce sector. Commerce activities absorbed most of the labour force made redundant in sectors such as mining and public services. During these years the Bolivian economy experienced relatively high and stable growth, which was higher than employment growth. Since employment elasticity stood below unity, total productivity for the Bolivian economy increased by 0.8% a year on average. This was the result of an uneven pattern across sectors. Those sectors exhibiting reductions or very low increases in employment, presented the largest productivity gains (e.g. mining and community, transport and communication, and personal services). Conversely, sectors presenting the highest increases in employment suffered the largest productivity losses (e.g. electricity, gas and water, commerce and restaurants).

During that period, sectors presenting employment elasticities higher than unity were manufacturing, electricity, gas and water, commerce and restaurants, and financial and firm services. Consequently, all these sectors exhibited productivity losses. Conversely, those sectors that showed employment elasticities lower than unity, and consequently obtained productivity gains, were agriculture, construction and transport and communication.

At the end of the 1990s and beginning of the 2000s, when the economic crisis started, employment elasticities decreased. The overall employment elasticity for the economy as a whole decreased to 0.7 in the period 1997-1999 and to 0.6 in the period 1999-2001. A plausible explanation for this is that firms decided to reduce employment as part of their restructuring process in order to confront lower activity and reduced profits. As a result, productivity levels increased but at a much slower pace.

During the 1997-1999 period, restructuring was very strong in the agriculture, mining and electricity sectors and these sectors exhibited very large productivity gains due to sizeable employment reductions. Sectors such as construction and commerce did not

restructure and suffered productivity losses due to output contractions. The manufacturing and transport and communication sectors presented elasticities close to unity, as moderate output growth rates were matched by employment growth rates. The financial and firm services sector represented a special case exhibiting large increases in employment and productivity, possibly due to a very strong increase in output.

During the 1999-2001 period, the restructuring process was very strong in sectors such as mining, manufacturing, commerce and restaurants, transport and communication, and community and personal services, where productivity gains were the result of employment rationing policies at the firm level. Electricity, gas and water experienced a sharp reduction in productivity due to high employment growth. Construction constitutes a special case because the employment elasticity of output increased despite a sizeable reduction in employment levels. This is explained by the extremely large contractions which occurred in construction activity and output.

In summary, between 1988 and 2001 the Bolivian economy went from a period of relatively rapid and stable growth to a period of economic crisis characterized by slower growth and lower employment creation. However, overall it can be said that economic growth did not contribute to poverty reduction because it did not generate enough quantities of employment with high levels of productivity, which in turn would provide the basis for sustainable real income increases for workers. First, economic growth tended to be concentrated in low employment intensity sectors, such as financial services, transport and telecommunication, electricity, gas and water, etc. Second, commerce was the only labour-intensive sector that presented stable and relatively high growth rates in employment. However, employment creation in these sectors exhibited low and sharply decreasing productivity. This is explained by the large amount of workers that were engaged in low-paid, small-scale commerce and related service activities, as a means of increasing income opportunities of poor households. Third, productivity growth across sectors and for the economy as a whole was very limited over the whole period under analysis. This limits the capacity of economic growth to become the basis for higher real wages and incomes for workers.

The Case of the manufacturing Sector

The analysis carried-out in the previous section brought about some interesting conclusions. First, it evidenced the process of low productivity growth exhibited by the Bolivian economy during the 1990s, years in which the economy presented relatively fast and stable growth. Second, because of low productivity growth during the 1990s, at the moment the economy experienced slower growth due to the economic crisis at the end of the 1990s, all activity sectors faced a problem of widespread low productivity, which in turn made it more difficult for firms to cope with lower activity and reduced profits. Finally, as a result of decreased profits and activity levels, once the economic crisis broke-out, most firms across sectors embarked on a restructuring process which involved reducing employment levels in order to reverse productivity losses and cope with the crisis.

That analysis however was based on data obtained from different sources (i.e. national census and household surveys). Thus, there is room for some data inconsistency due to problems related to different sample sizes and coverage of surveys, vis-à-vis census data that has national and complete coverage. In order to overcome these problems, this

section focuses on analysing the linkages between output growth, employment and poverty in the case of the Bolivian manufacturing sector. The data available for this particular sector is more consistent as it is obtained through firm surveys guaranteeing more stable, consistent and reliable time series data. Thus, this section analyses the trends observed in variables such as production, employment, productivity, real wages, employment elasticity of output, etc. for the Bolivian manufacturing industry and puts forward some conclusions in relation to existing relationships amongst these variables. Data utilized in this section comes from the annual manufacturing firm survey carried out by the National Institute of Statistics. The period covered in the analysis goes from 1987 until 2001.

Output, Employment, Productivity and Real Wages in the Manufacturing Sector

The trends observed in production, employment and productivity for the manufacturing sector, based on data taken from manufacturing firm surveys, are very similar to those observed in the previous section, based on national accounts data and household surveys. Although there are small differences in the figures observed, the trends followed by the key variables are quite similar.

Taking the manufacturing sector as a whole, we observe that production increased at an average rate of 4% a year during the whole period under analysis (Table 14a. and Graph 6a.). Employment on the other hand expanded by 2.6% a year, thus, productivity went up by 1.4% a year. The calculated value for the employment arc elasticity of output was therefore 0.6 for the whole period under analysis. It is interesting to note that, during the whole period covered, nominal wages paid by the manufacturing firms increased faster than the prices of the goods they produced and sold (Table 14a and Graph 7a.). As a result, the wage/price index[4] for the manufacturing sector as a whole grew by 4.2% a year. Since wage/price index growth was greater than productivity growth, the manufacturing sector's competitive position has weakened, limiting the capacity of manufacturing firms to cope with the economic crisis that broke-out at the end of the 1990s.

When analysing the different sub-periods separately, it can be observed that the average growth rate of output was relatively high during the period of stable growth (i.e. 1987-1998). It was 6% between 1987 and 1990, and 4.6% between 1991 and 1998. Employment growth, on the other hand, was also high during this period but slightly lower than output growth (i.e. 5.8% on average between 1987 and 1990, and 4.8% between 1991 and 1998). Thus the calculated employment arc elasticity of output was slightly below unity and therefore productivity practically stood constant, increasing at very small growth rates (0.2% on average between 1987 and 1990, and 0.4% between 1991 and 1998). On the other hand, the wage/price index rose by 2.7% a year on average between 1987 and 1990, and by 4.9% a year on average between 1991 and 1998, while real wages increased by 0.2% and 4.9% a year on average during those respective periods. Thus, the manufacturing sector was confronted by a situation in which real wages were increasing at a much faster pace in relation to labour

[4] The wage/price index is calculated by dividing the nominal wage— paid by the manufacturing firms—by the producer prices of the goods they produced and sell. Thus, it is an indicator of the relative competitiveness of the firms over time. The real wage index on the other hand is calculated by dividing nominal wages—paid by the manufacturing sector—by the consumer price index and measure the purchasing power of wages over time.

productivity, reducing in turn the profitability and competitive position of manufacturing firms. Therefore, because real wages and the wage/price index increased much faster than labour productivity, the manufacturing sector confronted a weak competitive position at the end of the 1990s when the economic crisis broke out.

Table 14
Output, Employment, Productivity and Real Wages

TOTAL MANUFACTURING INDUSTRY
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	4,0	6,0	4,6	0,5
EMPLOYMENT	2,6	5,8	4,2	-4,7
EMPLYMENT-OUTPUT ARC ELASTICITY	0,6	1,0	0,9	-9,8
NOMINAL WAGES	13,1	18,9	13,4	6,8
PRODUCER PRICES	8,5	15,7	8,1	2,6
PRODUCTIVITY	1,4	0,2	0,4	5,4
REAL WAGE	3,1	0,2	3,8	4,2
WAGE/PRICE RATIO	4,2	2,7	4,9	4,0

FOOD BEVERAGE AND TOBACOO
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	3,5	1,7	4,5	2,8
EMPLOYMENT	3,1	9,6	2,9	-2,4
EMPLYMENT-OUTPUT ARC ELASTICITY	0,9	5,7	0,6	-0,8
NOMINAL WAGES	13,5	23,1	13,8	3,8
PRODUCER PRICES	7,4	14,6	8,4	-1,6
PRODUCTIVITY	0,4	-7,2	1,6	5,3
REAL WAGE	3,5	3,8	4,2	1,3
WAGE/PRICE RATIO	5,7	7,4	5,0	5,5

TEXTILES, CLOTHING, LEATHER AND SHOES
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	4,5	-0,9	9,1	-1,8
EMPLOYMENT	3,4	-4,9	8,7	-1,9
EMPLYMENT-OUTPUT ARC ELASTICITY	0,8	5,2	1,0	1,0
NOMINAL WAGES	13,3	13,6	12,7	14,4
PRODUCER PRICES	7,5	15,6	7,2	0,8
PRODUCTIVITY	1,1	4,2	0,3	0,1
REAL WAGE	3,2	-4,3	3,2	11,7
WAGE/PRICE RATIO	5,3	-1,7	5,1	13,5

Source: National Institute of Statistics

Table 14 (cont'd)

PROCESSED WOOD, PAPER PRODUCTS AND PRINTING
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	2,0	-4,5	1,6	10,1
EMPLOYMENT	1,0	3,0	5,0	-10,6
EMPLYMENT-OUTPUT ARC ELASTICITY	0,5	-0,7	3,2	-1,1
NOMINAL WAGES	9,3	7,4	10,0	9,6
PRODUCER PRICES	7,4	14,7	9,2	-4,0
PRODUCTIVITY	0,9	-7,3	-3,3	23,2
REAL WAGE	-0,3	-9,5	0,6	7,0
WAGE/PRICE RATIO	1,8	-6,4	0,7	14,2

CHEMICAL AND PLASTIC PRODUCTS AND NON-METALIC MINERALS
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	2,9	6,7	4,3	-4,4
EMPLOYMENT	0,9	4,1	3,5	-8,5
EMPLYMENT-OUTPUT ARC ELASTICITY	0,3	0,6	0,8	2,0
NOMINAL WAGES	13,1	11,7	15,9	7,4
PRODUCER PRICES	11,0	19,2	8,0	11,2
PRODUCTIVITY	1,9	2,5	0,7	4,6
REAL WAGE	3,1	-5,9	6,0	4,8
WAGE/PRICE RATIO	1,9	-6,3	7,2	-3,4

BASIC METALS, METALIC PRODUCTS, MACHINERY AND EQUIPMENTS
ANNUAL AVERAGE PERCENTAGE CHANGES

	1987-2001	1987-1990	1991-1998	1999-2001
TOTAL PRODUCTION	6,3	29,5	2,9	-4,9
EMPLOYMENT	3,3	13,3	2,9	-5,1
EMPLYMENT-OUTPUT ARC ELASTICITY	0,5	0,5	1,0	1,0
NOMINAL WAGES	14,6	22,6	15,7	4,4
PRODUCER PRICES	6,0	14,2	5,7	-0,9
PRODUCTIVITY	2,9	14,3	0,0	0,2
REAL WAGE	4,4	3,3	5,9	1,8
WAGE/PRICE RATIO	8,1	7,3	9,4	5,3

Source: National Institute of Statistics

During the period of economic recession (i.e. 1999-2001) the manufacturing output growth rate decreased to only 0.5% a year on average. Employment on the other hand experienced a strong contraction, falling by 4.7% a year on average, bringing about a sharp increase in productivity, which grew by 5.4% a year on average. Once again, this finding tends to confirm the hypothesis that firms in the manufacturing industry embarked on a restructuring process, making excess labour redundant, in order to confront reductions in sales and profits. Nevertheless, real wages kept increasing at a high rate during this period (4% a year on average) albeit at a slower pace than productivity.

In summary, the manufacturing sector experienced a relatively high growth in production and employment during most of the 1990s. This permitted productivity to be maintained at a constant level during that period. Real wages and the wage/price index on the other hand increased faster than productivity, reducing in turn the manufacturing sector's profitability and competitive position. During the economic crisis of the end of the 1990s and beginning of the 2000s, manufacturing firms reduced employment in order to attain productivity gains. Real wages however still experienced high growth rates during the crisis period.

Although a disaggregated analysis shows some similarities between the behaviour of output, employment, productivity and real wages for the different branches comprising the manufacturing sector vis-à-vis the manufacturing sector as a whole, it is very important and interesting to analyze the behaviour of these variables for each of the manufacturing branches separately.

a) Food, Beverage and Tobacco industry (Branch 31)

During the whole period under analysis, output and employment in the Food, Beverage and Tobacco manufacturing industry expanded at an almost equal rate (3.5% and 3.1% a year on average respectively). Thus, the calculated arc elasticity was 0.9 and the sector experienced very small productivity gains. Productivity increased at an annual average growth rate of 0.4% (Table 14b. and Graph 6b.). Besides, real wages and the wage/price index went up by 3.5% and 5.7% a year respectively. Since productivity growth was smaller than real wages growth, the sector's competitive position tended to deteriorate during the whole period under study (Table 14b and Graph 7b).

When analysing the different sub-periods separately, it can be observed that during the period 1987-1990, this sector presented small growth in output (1.7% a year on average) and very high growth in employment (5.7% a year on average). Since the calculated arc-elasticity during that period was as high as 5.7, productivity decreased by 7.2% a year. Besides, real wages and the wage/price index rose by 3.8% and 7.4% a year. The observed large decreases in productivity and significant increases in real wages largely undermined the sector's competitive position during this period.

Between 1991 and 1990 the Food, Beverage and Tobacco industry experienced some recovery in productivity. Average output growth increased to 4.5% a year and average employment growth went down to 2.9%. The calculated employment arc-elasticity of output reduced below unity (to 0.6), and labour productivity went up by 1.6% a year. Nevertheless, real wages and the wage/price index grew by 4.2% and 5% a year on average, offsetting the beneficial effects of productivity gains on the sector's competitive position.

During the 1999-2001 period, sectoral output increased by 2.8% a year on average. Besides, firms operating in this sector went through a restructuring process, reducing employment by an average annual rate of 2.4%. Productivity increased by 5.3% a year and real wages by only 1.3% a year on average. However, since the sector's producer prices deteriorated by 1.6% a year on average the wage/price index increased by an average rate of 5.5% a year, which was greater than the rate at which productivity expanded. Therefore, the sector's competitiveness was again undermined.

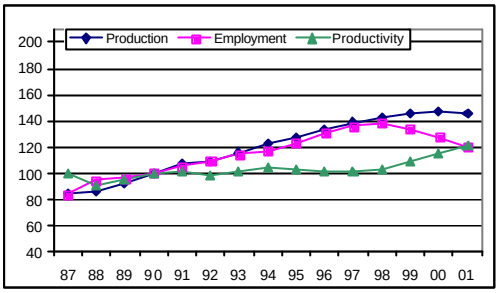
b) Textiles, Clothing, Leather and Shoes Industry (Branch 32)

During the whole period under analysis, output in the Textile, Clothing, Leather and Shoes manufacturing industry increased by 4.5% a year. This rate was greater than the employment growth rate (3.4% a year on average) (Table 14c and Graph 6c). The sector's calculated employment arc-elasticity of output for the whole period was 0.8, thus productivity experienced relatively small growth (1.1% a year on average). Besides, real wages and the wage/price index increased by 3.2% and 5.3% a year. Since productivity growth was smaller than growth of real wages and the wage/price index, the competitive position of the sector deteriorated over time (Table 14c and Graph 7c).

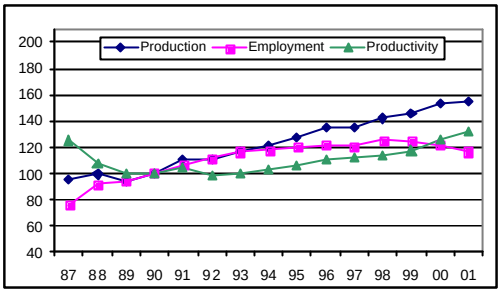
In analysing the different sub-periods, it can be observed that during the 1987-1990 period, the sector seemed to be still adjusting and restructuring after the stabilization program implemented in the second half of the 1980s. During those years output experienced contractions of about 1% a year on average. Coupled with the foregoing, firms reduced employment by 4.9% a year, bringing about an increase in productivity of 4.2% a year. Besides, real wages contracted by 4.3% a year and the sectoral wage/price index decreased by 1.7% a year on average. Thus, firms consolidated a relatively strong competitive position during those years.

Graph 6
Production, Employment and Productivity in the Manufacturing Sector

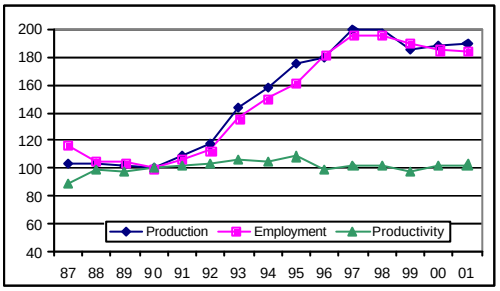
PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
TOTAL MANUFACTURING INDUSTRY
(Indexes , Base Year 1990 = 100)



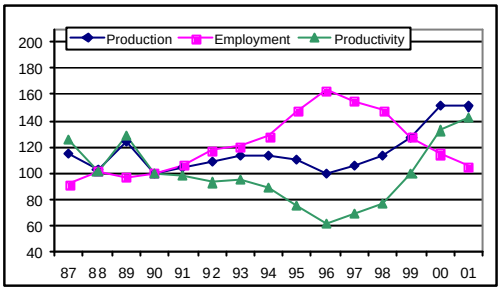
PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
FOOD BEVERAGE AND TOBACOO
(Indexes , Base Year 1990 = 100)



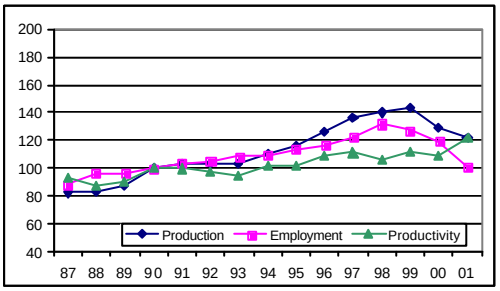
PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
TEXTILES, CLOTHING, LEATHER AND SHOES
(Indexes , Base Year 1990 = 100)



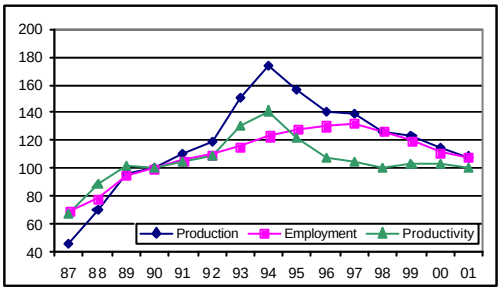
PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
PROCESSED WOOD, PAPER PRODUCTS AND PRINTING
(Indexes , Base Year 1990 = 100)



PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
CHEMICAL AND PLASTIC PRODUCTS AND NON-METALIC MINERALS
(Indexes , Base Year 1990 = 100)



PRODUCTION, EMPLOYMENT AND PRODUCTIVITY
BASIC METALS, METALIC PRODUCTS, MACHINERY AND EQUIPMENTS
(Indexes , Base Year 1990 = 100)



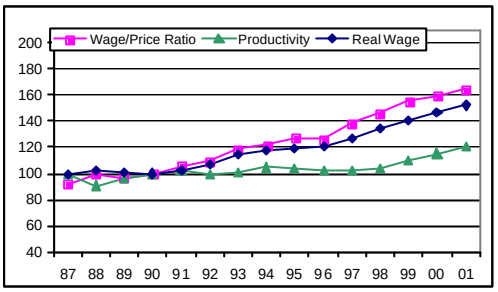
Source: National Institute of Statistics

Between 1991 and 1998, production in the textiles, clothing, leather products and shoes industry expanded strongly, increasing by 9.1% a year on average. Employment expanded significantly as well, but at a slower pace than production (8.7% a year). This brought about a modest increase in productivity, which grew by 0.3% a year. Although the sector maintained the productivity gains attained in the previous period, real wage increases were well above productivity gains the former growing by 3.2% a year. The wage/price index increased even faster (by 5.1% a year), reducing the sector's firm's competitive positions.

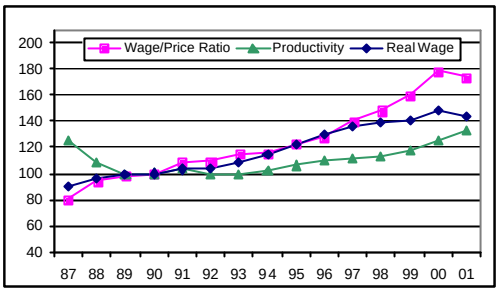
Graph 7

Real Wages and Productivity in the Manufacturing Sector

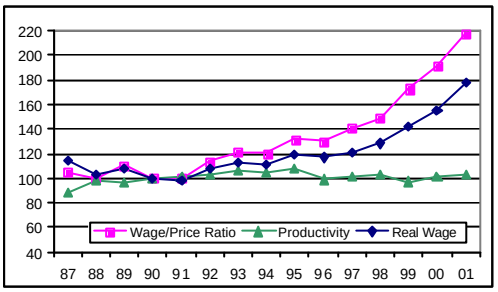
REAL WAGES AND PRODUCTIVITY
TOTAL MANUFACTURING INDUSTRY
(Indexes , Base Year 1990 = 100)



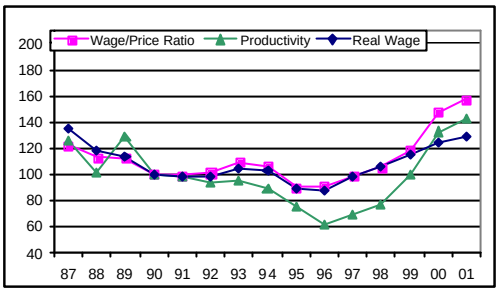
REAL WAGES AND PRODUCTIVITY
FOOD BEVERAGE AND TOBACOO
(Indexes , Base Year 1990 = 100)



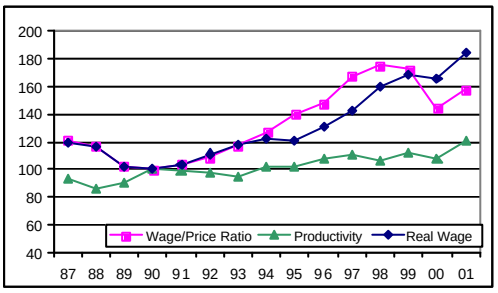
REAL WAGES AND PRODUCTIVITY
TEXTILES, CLOTHING, LEATHER AND SHOES
(Indexes , Base Year 1990 = 100)



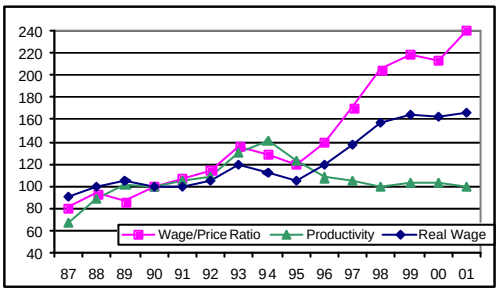
REAL WAGES AND PRODUCTIVITY
PROCESSED WOOD, PAPER PRODUCTS AND PRINTING
(Indexes , Base Year 1990 = 100)



REAL WAGES AND PRODUCTIVITY
CHEMICAL AND PLASTIC PRODUCTS AND NON-METALIC MINERALS
(Indexes , Base Year 1990 = 100)



REAL WAGES AND PRODUCTIVITY
BASIC METALS, METALIC PRODUCTS, MACHINERY AND EQUIPMENTS
(Indexes , Base Year 1990 = 100)



Source: National Institute of Statistics

Finally, between 1999 and 2001 production and employment decreased at about the same pace (by almost 2% a year on average). Thus, productivity tended to stay at the same level. However, real wages and the wage/price index went up at very high rates (11.7% and 13.5% a year respectively), resulting in serious losses in terms of competitiveness for the firms operating in this sector.

c) Processed Wood, Wood Products, Paper, Paper Products and Printing Industry (Branches 33 and 34)

During the whole period under analysis, output in the processed wood, wood products, paper, paper products and printing manufacturing industry expanded at 2% a year on average, while employment grew by 1% a year. The sector's calculated employment arc-elasticity of output was 0.5. Thus, the sector experienced relatively small gains in productivity, which increased by 0.9% a year (Table 14d and Graph 6d). Real wages on the other hand decreased by 0.3% a year. However, the wage/price index went up by 1.8% a year, the double of the rate of growth of productivity (Table 14d and Graph 7d). As a result, the sector's competitive position tended to deteriorate over time.

In the 1987-1990 period, the sector exhibited large output contractions, averaging 4.5% a year. Besides, employment expanded significantly (by 3% a year), bringing about sizable productivity losses. Productivity contracted by 7.3% a year on average during that period. However, real wages and the wage/price index contracted considerably (by 9.5% and 6.4% a year respectively). The latter contributed to offset productivity losses and to improve the sector's competitive position.

During the 1991-1998 period, output experienced modest increases (by 1.6% a year) and employment expanded at a much faster pace (by 5% a year). Thus, the sector's productivity kept decreasing during those years, that time by 3.3% a year on average. However, real wages and the wage/price index did not increase very much during that period. Both variables exhibited average growth rates lower than 1% a year.

Between 1999 and 2001, the sector experienced a restructuring process. Although production increased fast (by 10.1% a year), there was a large contraction in employment (by 10.6% a year), bringing about large productivity gains. Productivity increased by 23.2% a year on average. Large productivity gains permitted sizable increases in real wages and in the wage/price index, without undermining the sector's competitive position. Real wages increased by 7% a year and the wage/price index by 14.2% a year on average.

d) Chemical Products, Plastic Products, and Non-metallic Minerals (Branches 35 and 36)

During the whole period studied, output in the chemical products, plastic products and non-metallic minerals manufacturing industry increased by 2.9% a year, while employment expanded at an annual rate of only 0.9%. The sector's calculated employment arc-elasticity of output was 0.3. Thus the sector experienced gains in productivity, which increased by 1.9% a year on average (Table 14e and Graph 6e). This rate was equal to the rate of growth of the wage/price index. Therefore, the competitive position of the sector tended to remain unchanged. Real wages on the other hand increased by 3.1% a year on average (Table 14e and Graph 7e).

In the 1987-1990 period, this sector experienced a strengthening of its profitability and competitive position. The sector showed high growth rates in production (6.7% a year on average) and in employment (4.1% a year). Since output grew faster that employment, productivity exhibited positive growth rates of about 2.5% a year on average. Furthermore, real wages and the wage/price index presented sizable reductions, averaging 5.9% and 6.3% a year respectively.

During the 1991-1998 period, output and employment increased at a slower pace if compared to the previous period (respectively by 4.3% and 3.5% a year on average). As a result, productivity maintained positive growth rates albeit at much smaller rates (0.7% a year). At the same time, real wages and the wage/price index experienced large increases (by 6% and 7.2% a year respectively). Thus, profitability and the competitive position of the sector tended to deteriorate.

Finally, during the economic slow-down period (1999-2001), the sector's firms also went through a restructuring process. Output decreased by 4.4% a year on average, but employment decreased at a faster pace (by 8.5% a year), bringing about productivity gains of 4.6% a year on average. Although real wages in the sector increased by 4.8% a year the wage/price index reduced by 3.4% a year, because producer prices in the sector increased by more than 11% a year. As a result, the profitability and competitive position of the sector was strengthened.

e) Basic Metals, Metallic Products, Machinery and Equipments (Branches 37, 38 and 39)

The basic metals, metallic products, machinery and equipment manufacturing industry, during the whole period under analysis, presented on average a relatively large increase in output (6.3% a year) and a smaller increase in employment (3.3% a year). Thus, the employment arc-elasticity for the whole period was 0.5—smaller than unity. Therefore, productivity tended to increase by 2.9% a year (Table 14f and Graph 6f). However, the competitive position of the sector was undermined because real wages and the wage/price index increased faster than labour productivity. These variables rose respectively by 4.4% and 8.1% a year on average during the whole period under analysis (Table 14f and Graph 7f).

By analysing the different sub-periods, we observe that between 1987 and 1990, the sector experienced an outstanding increase in output (by 29.5% a year). Besides, employment went up by 13.3% a year, resulting in large productivity gain, which increased by 14.3% a year. These large gains attained in productivity permitted important increases in real wages and in the wage/price index, of 3.3% a year and 7.3% a year respectively.

During the 1991-1998 period, output and employment expanded at the same rate (2.9% a year on average). Thus, productivity remained unchanged, meaning that the employment arc-elasticity was equal to unity. At the same time, real wages and the wage/ price index increased respectively by 3.3% and 7.3% a year on average. Since these rates were higher than the rate of growth of productivity, the sector's competitive position deteriorated.

In the 1999-2001 period, output went down by 4.9% a year and the sector embarked on a process of restructuring, reducing employment by 5.1% a year. As a result, the sector benefited from small gains in productivity, increasing by 0.2% a year. Real wages and the wage/price index increased faster than productivity—by 1.8% and 5.3% a year on average—undermining the sector's competitive position.

A labour demand function for the manufacturing sector

In the previous section, the analysis of employment elasticities of production, for the manufacturing sector, was based on elasticities calculated through the arc-elasticity methodology, i.e. by dividing employment growth rates by output growth rates during a given period of time. This methodology however could be misleading because it imputes all employment changes to output changes, and does not consider the effects that other variables, such as real wages, capital utilization, etc. may have on employment variations. By imputing all changes which occurred in employment purely to output changes we might be overestimating or underestimating the elasticity values, since we are not considering the effects of other variables.

In order to overcome this problem, in this section we estimate employment elasticities of output for the manufacturing industry using econometric methods. For this purpose, we estimate labour demand functions for the manufacturing sector, which will allow us to analyze the existing linkages between employment, production, real wages and capital utilization. To this end a "panel-data" analysis is utilized based on data obtained from the Manufacturing Firm Survey carried-out by the National Institute of Statistics (INE).

The analysis is aimed at estimating labour elasticities of output for the manufacturing sector as a whole, as well as for each of the industrial branches that comprise the manufacturing sector. Furthermore, the model allows us to evaluate the substitution or complementarity effects existing between different productive factors, specifically between labour and capital. Thus, a better specification of manufacturing labour demand is obtained and therefore, the estimated labour elasticities of output reflect in a better way the responsiveness of employment to output changes, other effects remaining constant (ceteris-paribus).

The estimated labour-demand function has the following specification.

$$L_I = F(L_{I,t-1}, Q_I, W_I/P_I, CE_I)$$

Where:

L_I	: Number of workers employed in manufacturing sector I
$L_{I,t-1}$	: Number of workers employed in manufacturing sector I, in period t-1
Q_I	: Output in manufacturing sector I
W_I/P_I	: Wage/Price index in manufacturing sector I
CE_I	: Consumption of electricity in manufacturing sector I

In order to obtain labour elasticities directly, we specify the labour demand function in terms of logarithms.

$$\log(L_I) = \beta_0 + \beta_1.\log(L_{I,t-1}) + \beta_2.\log(Q_I) + \beta_3.\log(W_I/P_I) + \beta_4.\log(CE_I)$$

The final specification of the labour demand function includes a lagged value of labour demand, which was included in order to capture an inertial employment creation term, as well as to eliminate autocorrelation problems from the econometric estimates.

Two labour demand functions were estimated econometrically: first, a restricted version where the β parameters (labour demand elasticities) for all manufacturing branches were restricted to be the same, thus the estimated equations represented a labour demand function for the manufacturing sector as a whole. The second type of equations estimated were non-restricted versions of labour demand functions, where the β parameters were allowed to vary across different manufacturing branches. Thus, labour demand elasticities for each of the branches are computed and can be compared with the demand elasticity for the manufacturing sector as a whole, as well as among the different sectors.

The results estimated for the restricted labour demand function, which represents the labour demand function for the manufacturing sector as a whole, appears in detail in Annex A. These results show that labour demand in period t is a function of a lagged value of the same variable, which is highly significant and has a very high demand elasticity (0.97). This means that inertial employment is very significant in explaining employment demand in a given year. Firms do not tend to vary employment levels, either upwards or downwards, in response to output changes from one year to the other. Besides, labour laws introduce rigidities to the labour market making it costly for employers to make employment reductions in the short run, in response to output contractions. Thus, output fluctuations become less significant in explaining employment changes, once we include a lagged value of employment as an explanatory variable of labour demand. This explains why the employment elasticity of output estimated econometrically is much lower than the labour arc-elasticity of output. The econometrically estimated elasticity is only 0.17 compared to 0.6 estimated using the other methodology.

Another finding derived from the econometric exercise is that labour demand appeared to be substitutive vis-à-vis capital utilization. The employment elasticity of electricity consumption, which is taken as a proxy of capital utilization, was -0.15. Moreover, the wage/price relation has a negative impact on employment, making the employment elasticity of wage/price index equal to -0.13.

Another plausible explanation for the large difference found between the employment arc-elasticity of output and that estimated econometrically, can be found in the analysis of the results obtained from the unrestricted labour demand function. The unrestricted labour demand function provides separate elasticities for each of the manufacturing industry branches. The results appear in detail in Annex B. A disaggregated analysis shows that employment elasticities of output tend to vary across sectors. The estimated labour elasticity for basic metals, metallic products, machinery and equipments (branches 37 to 39) is very low (0.11). Elasticities in the case of food, beverage and tobacco (branch 31) and processed wood, wood products, paper, paper products and printing (Branches 33 and 34) are at an intermediate level (around 0.3). Finally, elasticities in the case of textiles, clothing, leather and shoe industry (branch 32) and chemical products, plastic products, and non-metallic minerals (branches 35 and 36) are much higher (0.68 and 1.00 respectively). Thus, the econometrically estimated employment elasticity of output for the total manufacturing sector was influenced significantly by those sectors with the lowest elasticities, namely branches 37-39, 31 and 33-34. Besides, the estimated employment elasticities of output for the branches of

food, beverage and tobacco (branch 31) and basic metals, metallic products, machinery and equipments (branches 37 to 39) were not statistically significant.

Another finding derived from the unrestricted labour demand functions was that in all manufacturing branches employment was negatively correlated with the wage/price index. However, these elasticities were statistically significant only in the cases of branches processed wood, wood products, paper, paper products and printing (branches 33 and 34); chemical products, plastic products, and non-metallic minerals (branches 35 and 36); and basic metals, metallic products, machinery and equipments (branches 37 to 39).

Employment, Real Wages and Poverty

The previous section analysed employment elasticities of output in order to determine whether growth has tended to promote employment creation. This section focuses on a more detailed examination of whether or not economic growth has led to structural changes which have benefited the poor. In this regard, the section first examines the sectors and occupations where the poor are concentrated as well as the trends in earnings in various occupations. Second, the section analyses whether there have been discernible shifts in the structure of employment towards occupations with higher productivity and incomes leading to a reduction in poverty incidence. Finally, the section concentrates on the analysis of real wages and earnings of wage-paid workers and real earnings of the self-employed, as additional transmission mechanisms of the benefits of growth to the poor.

There is a general agreement amongst the various studies carried out regarding the sources of income inequalities in the Bolivian labour market. The key factors most often identified as sources of income inequalities are: i) The location of workers (i.e. urban vis-à-vis rural area), ii) The activity sector where workers are employed, iii) labour category of workers, and iii) qualification of workers. Including these factors in the analysis of the existing linkages between real wages and productivity will provide us with additional insights into whether the benefits of growth have reached the poor.

a) Employment and poverty in urban and rural areas

Table 15 presents the distribution of workers between urban and rural areas in the last 6 years. Clearly the trends identified show an increase in the share of urban employment to the detriment of rural employment. In 1996 52.2% of employment was located in the urban areas. In 2001 this share increased to 55.5%. As it was discussed in previous sections, urban migration explains this trend, which in turn was the result of income differentials obtained by workers in urban vis-à-vis rural areas. In 1996, real incomes received by urban workers were 3 times those received on average by workers in the rural areas. Between 1996 and 2001 real earnings received by urban workers decreased by 2.6% a year on average, while real earnings by rural workers drooped by 9.8% a year on average. Besides, the poverty incidence amongst workers in rural areas is much higher than that prevailing amongst urban workers. In 1996 47.4% of urban workers perceived incomes that situated them below poverty line[5]. The poverty incidence among

[5] Poverty line utilized was calculated by the National Institute of Statistics and UDAPE, based on a basket which includes minimum food requirements and other basic expenditures. Baskets tend to vary among

rural workers was as high as 87.9%. In 2001 poverty incidence decreased both among urban and rural workers. However, the poverty incidence among rural workers decreased faster than among their urban counterparts.

Thus, there are clear differences in income opportunities between workers in the urban and rural areas. This has an important impact on the magnitudes of poverty incidence, which tends to promote urban migration. Besides, migration is promoted not only by the existing earning gap but also by observed trends in real earnings over time, which tends to enlarge the existing income gap.

TABLE 15[6]
DISTRIBUTION OF WORKERS, EARNINGS DIFFERENTIALS AND POVERTY INCIDENCE BETWEEN URBAN AND RURAL WORKERS

	1996	1997	1999	2000	2001
LOCATION OF WORKERS					
URBAN	52,2%	52,6%	55,4%	57,5%	55,5%
RURAL	47,8%	47,4%	44,6%	42,5%	44,5%
NATIONAL	100,0%	100,0%	100,0%	100,0%	100,0%
AVERAGE REAL EARNINGS (CONSTANT BOLIVIANOS IN 2000)					
URBAN	1107	1279	1091	1099	971
RURAL	369	527	234	223	220
NATIONAL	853	1024	710	727	637
POVERTY INCIDENCE					
URBAN	47,4%	42,8%	43,8%	34,9%	44,1%
RURAL	87,9%	83,8%	80,1%	93,2%	80,9%
NATIONAL	66,7%	62,2%	60,0%	59,7%	60,5%

Source : National Institute of Statistics

b) Employment and poverty across activity sectors

Income opportunities and poverty incidence tend to vary across the activity sectors where workers are employed. Graph 8 shows that the distribution of workers across activity sectors is quite different between urban and rural areas.

In urban areas, workers are mostly engaged in service sectors, such as commerce, restaurants and hotels (30% in 2001), public administration, personal and communal services (21%), transport and communication (8%) and financial and firm services (6%). Manufacturing activities employ 14% of workers and agriculture 11%. The structural changes observed in urban employment show that employment in the public administration and communal and personal services decreased from 35% in 1985 to

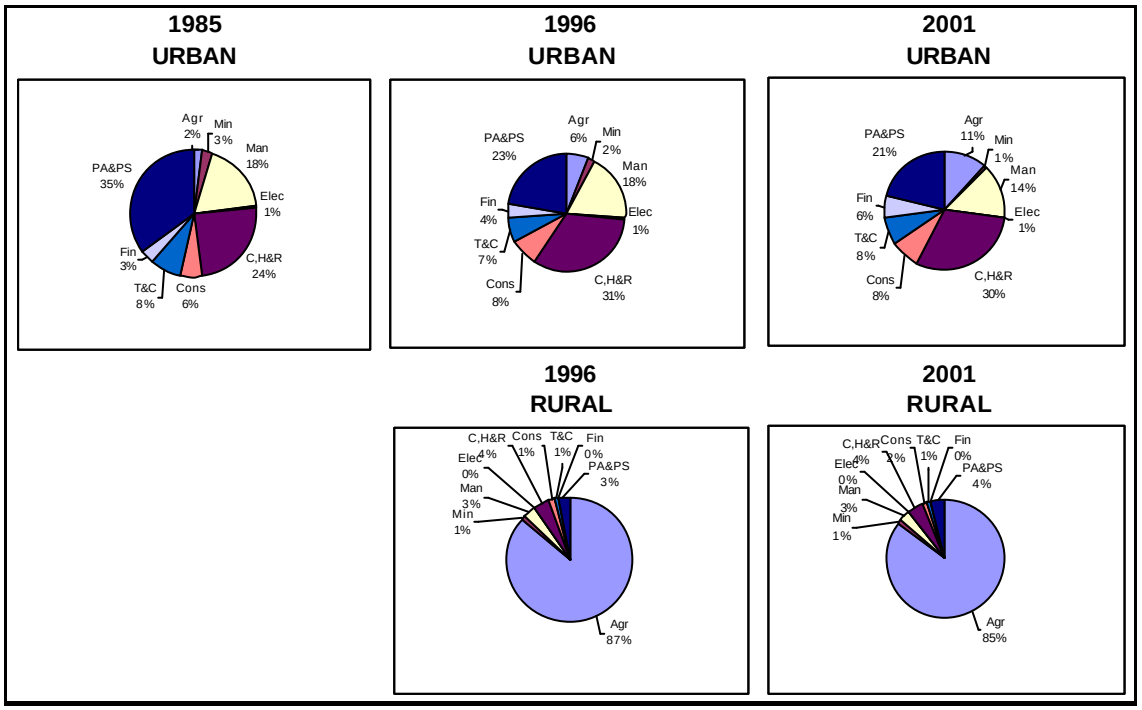
regions and between urban and rural areas, depending on the specific particularities of each of the regions.

[6] The poverty figures presented in table 13 are different from those appearing in table 4 because the former are calculated at an individual worker level, while the latest are calculated at the household level.

21% in 2001. The reform process implemented after 1985 comprised a sharp reduction in the size of public sector employment. This reduction has been accompanied by an increase in the share of employment in activities such as commerce, restaurants and hotels, construction, financial services. Manufacturing reduced its share in total urban employment from 18% in 1985 to 14% in 2001.

Clearly, there are trends leading towards an employment structure where more people are employed in the tertiary sector. The trends followed by real earnings tend to favour the observed structural shifts in employment (Graph 9). Real earnings that increased the most were those of workers engaged in financial and firm services, electricity, transport and communication. Sectors where real earnings did not increase significantly were manufacturing, commerce, hotels and restaurants and construction. The explanation for the increased share in total urban employment of sectors where real incomes lagged behind is that these sectors absorbed recent rural migrants, with low levels of human capital, who tended to get employed in low paid jobs. Consequently, poverty incidence was much higher in these sectors, which in turn have the highest shares in total urban employment, i.e. manufacturing, commerce, hotels and restaurants, and construction. However, the poverty incidence amongst workers in practically all activity sectors in the urban areas tended to decrease over time (Graph 10).

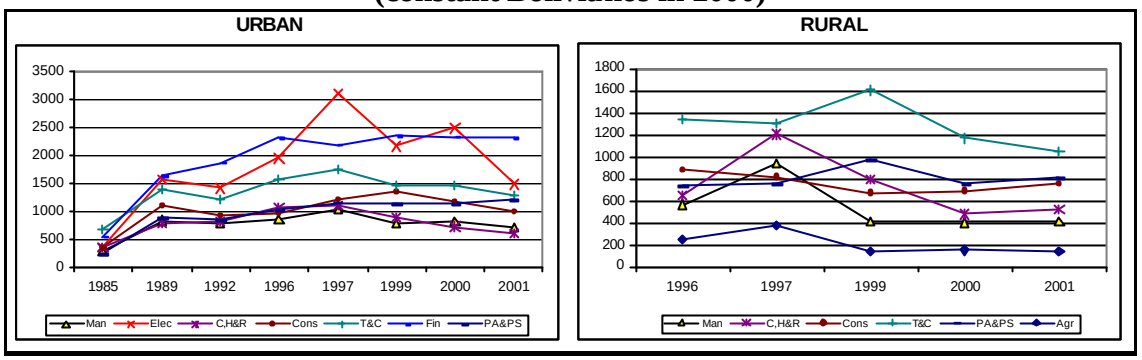
GRAPH 8
PERCENTAGE OF WORKERS BY ECONOMIC ACTIVITY AND LOCATION



Source: National Institute of Statistics

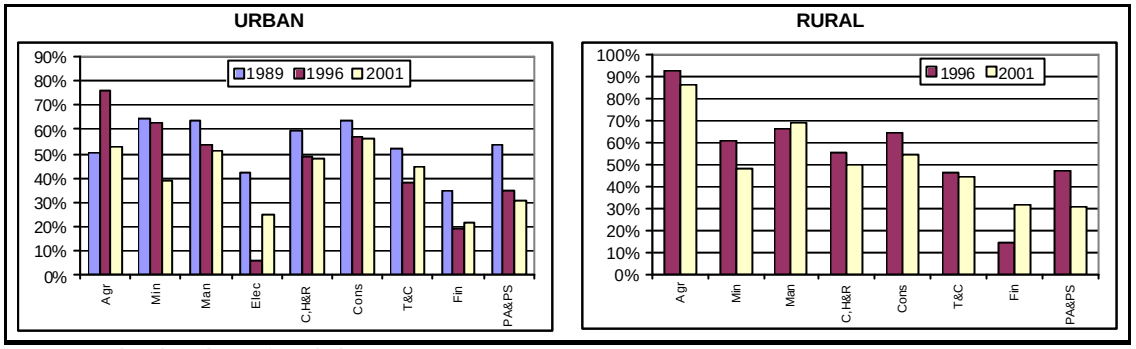
GRAPH 9
AVERAGE REAL EARNINGS OF WORKERS BY ECONOMIC ACTIVITY AND LOCATION

(constant Bolivianos in 2000)



Source: National Institute of Statistics

GRAPH 10
POVERTY INCIDENCE BY ECONOMIC ACTIVITY AND LOCATION



Source: National Institute of Statistics

Workers in the rural area on the other hand tended to be employed in the agricultural sector. About 85% of workers were engaged in agricultural activities in 2001 whereas personal and communal services constituted merely 4% and commerce, restaurants and hotels also constituted 4 % of workers. The observed trend followed by real earnings show that incomes received by agricultural workers lagged well behind real earnings received by workers engaged in other rural activities. Poverty incidence indicators on the other hand, show that poverty affects largely workers engaged in agricultural activities. In 2001, 85% of agricultural workers in the rural areas obtained incomes below the defined poverty line for that year.

In summary, although poverty incidence amongst workers both in the urban and rural areas has tended to decrease in the last years, the largest share of Bolivian workers tends to be employed in the lowest paid activities, where poverty incidence is the highest.

c) Employment and poverty across labour categories

The structure of employment across labour categories is different in the urban and rural areas. This in turn has an impact on the patterns followed by real earnings differentials and poverty incidences across labour categories.

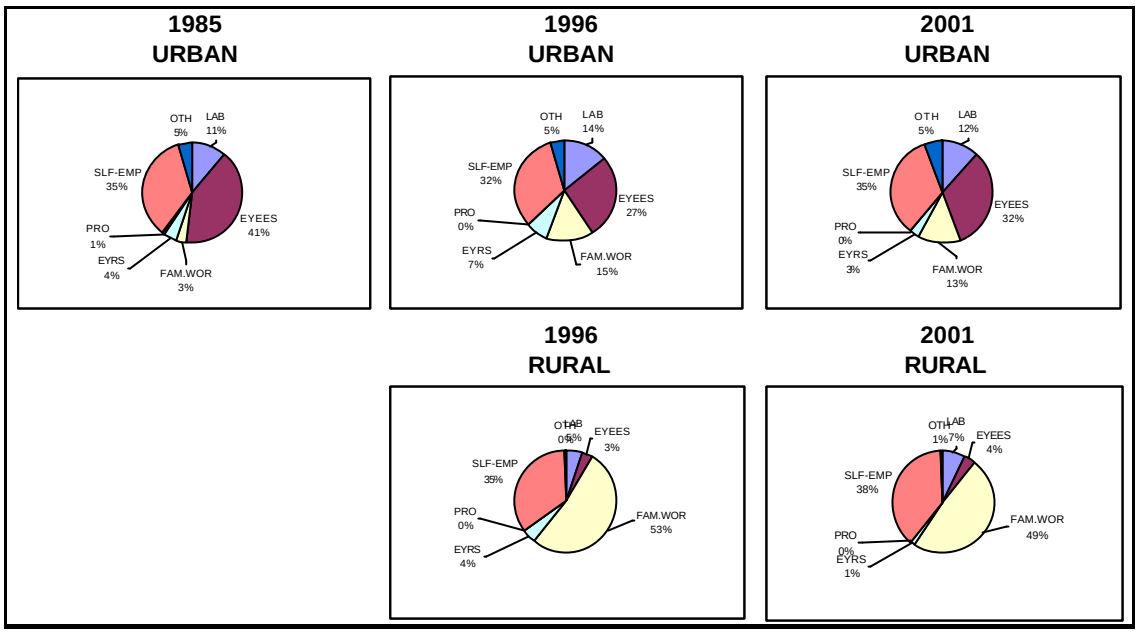
In 2001 the bulk of urban employment was concentrated among the following labour categories: self-employed (35%), employees (32%), labourers (12%) and family workers (13%). Over time, there have been some structural changes. For instance, the share of employees decreased from 41% of total urban employment in 1985 to 35% in 2001. This decrease is also linked to the contraction in public employment discussed in the previous section. There was also a significant increase in the share of family-workers in total employment, as a result of different strategies followed by households to increase their income opportunities. The share of labourers in total urban employment has remained fairly constant over time, increasing from 11% in 1985 to 12% in 2001. Finally, the share of employers varied between 3% and 7% over the period studied, and that of professionals stood at a very low level (1%) (Graph 11).

The trend exhibited by real earnings among the different urban labour categories varied significantly over time. Real earnings of employers and professionals showed the highest levels and were those that increased the fastest. Real earnings received by employees also presented significant increases, rising by 10% a year between 1985 and 2001. Real earnings of labourers, family-workers and self-employed presented the lowest levels and remained largely stagnated over time (Graph 12).

According to previous analysis, poverty incidence among the three last labour categories, i.e. labourers, self-employed and family workers were the highest. However, over time there was a decreasing trend of poverty incidence across these labour categories. Poverty incidences in the other labour categories, i.e. employers, employees and professionals, are much lower and have tended to decrease much faster compared to the other categories (Graph 13).

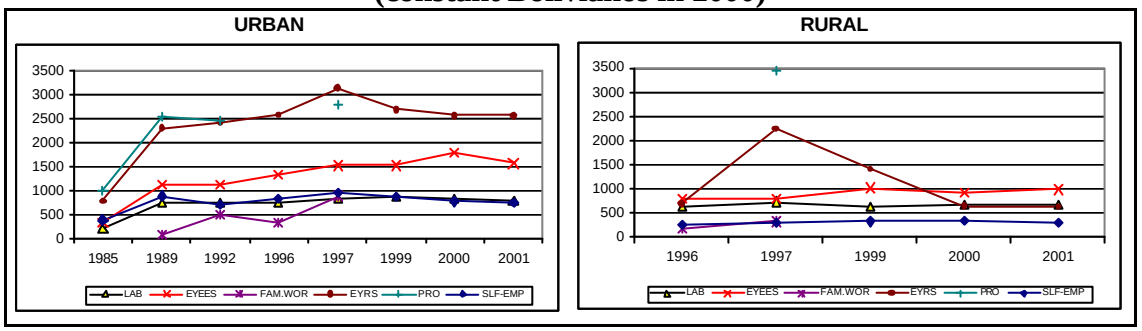
GRAPH 11

PERCENTAGE OF WORKERS BY LABOUR CATEGORY AND AREA OF LOCATION



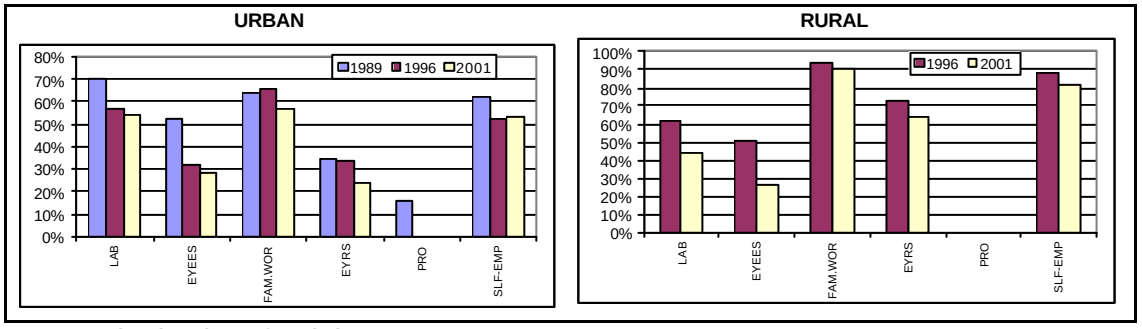
Source: National Institute of Statistics

GRAPH 12
AVERAGE REAL EARNINGS OF WORKERS BY LABOUR CATEGORY AND LOCATION
(constant Bolivianos in 2000)



Source: National Institute of Statistics

GRAPH 13
POVERTY INCIDENCE BY LABOUR CATEGORY AND LOCATION



Source: National Institute of Statistics

Workers in rural areas are mainly family-workers and self-employed representing a share of 49% and 38% respectively in 2001. In the same year the share in total

employment of other labour categories was very small; 7% were labourers, 3% were employers and 4% were employees.

In terms of real earnings trends, we observe that real incomes of self-employed and family workers were the lowest among rural workers and remained at the lowest levels over the whole period under analysis.

Finally, in rural areas, poverty incidence affected family workers and self-employed the most. More than 90% of family workers and more than 80% of self-employed were below the poverty line. Poverty affected to a lesser extent employees, employers and labourers. In all labour categories we observe a reduction in poverty incidence between 1996 and 2001.

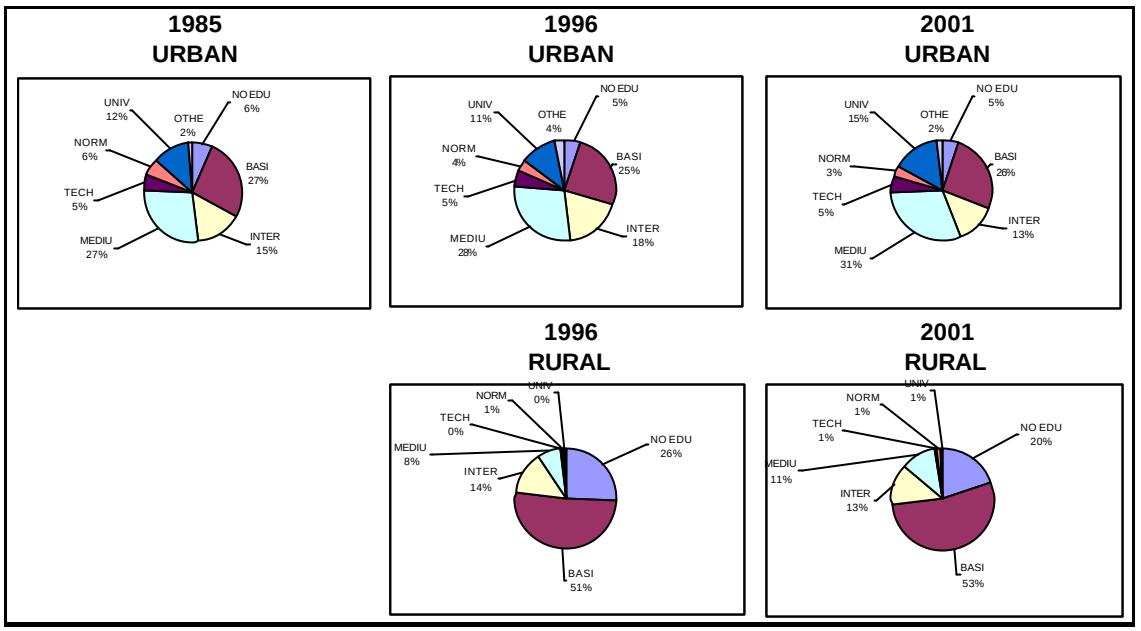
d) Employment and poverty across workers with different educational level

The educational level of workers has been identified, by many studies on the Bolivian labour market, as the single most important variable in explaining income differentials amongst workers. The structure of workers by educational level tends to be different in the urban and rural areas. The structure of the urban labour force in 2001, based on their educational level, shows that 27% of workers had completed basic education, another 27% completed middle education, 13% intermediate education, 5% technical training, 15% university education, and 5% had no training at all. This structure has remained very much unchanged over time. The most significant change was the increase in the share of workers with university training which went up from 12% of total urban workers in 1985 to 15% in 2001 (Graph 14).

As mentioned before, there is a strong correlation between the educational level of workers and their real earning levels. Workers with university training have the highest real income levels and the highest rates of real income growth overtime. Workers with technical education come in second place, whereas workers with no educational level have the lowest real income levels (Graph 15).

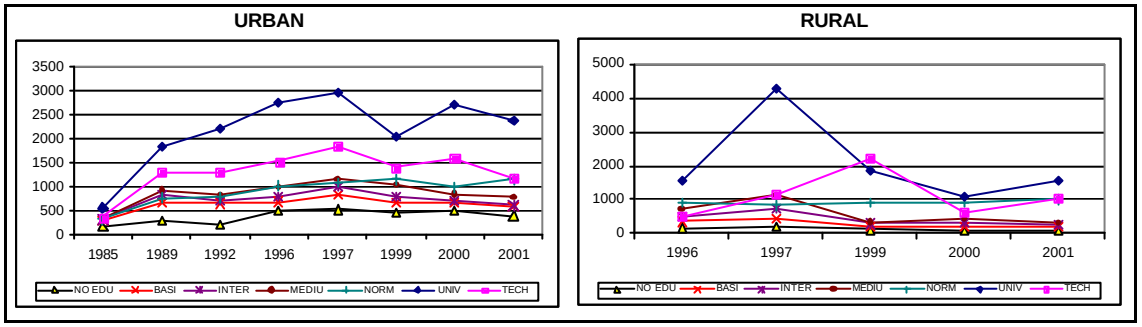
Poverty incidence is also closely linked to educational levels, as can be seen in Graph 16. Poverty incidence of workers with no educational level was higher than 60% in 2001. This incidence was as low as 10% in the case of workers with university training. Again, there is a decreasing trend over time in poverty incidence across all workers with different educational level.

GRAPH 14
PERCENTAGE OF WORKERS BY EDUCATION LEVEL AND LOCATION



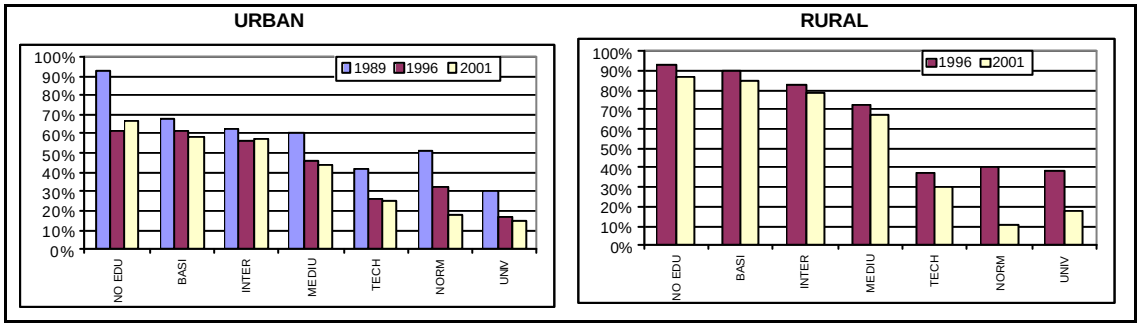
Source: National Institute of Statistics

GRAPH 15
AVERAGE REAL EARNINGS OF WORKERS BY EDUCATION LEVEL AND LOCATION
(constant Bolivianos in 2000)



Source: National Institute of Statistics

GRAPH 16
POVERTY INCIDENCE BY EDUCATION LEVEL AND LOCATION



In the case of rural workers, in 2001 53% had basic education, 20% had no education, 13% had intermediate education and 11% had middle education. These four educational

categories comprised 97% of total rural workers. The share of workers with technical or university education was insignificant.

The educational level has proven to be less important in explaining real income differentials in the rural areas, compared to the case of the urban area. However, workers with university studies have tended to earn much more than workers with lower educational level.

The poverty incidence amongst rural workers was also very much correlated to their educational level. Poverty incidence was close to 90% among workers with no educational level, and it was below 20% in the case of workers with university education.

In summary, it is clear that the employment structure in the Bolivian economy has not changed significantly over time, and there have been no discernible shifts of workers towards sectors and occupations with higher productivity and thus with capacity to generate higher real incomes. The most important shift in this direction was the continuous migration from rural to urban areas which occurred as a means to escape extreme poverty. The large disparities existing between urban and rural incomes, the differentiated access by urban and rural households to basic services, such as education, health, and water facilities has also promoted urban migration.

In rural areas, the largest share of workers are engaged in agricultural activities, which in turn generate the lowest paid jobs and has the highest poverty incidence. Other rural activities generate better-paid jobs but their incidence in total rural employment is very limited. In urban areas, employment is mostly concentrated in the service sector, which in turn presented the fastest growing employment creation overtime. However, employment created in the service sector (in activities such as commerce, transport and other services) was of very low productivity and poorly paid.

The share of informal labour categories in total employment—self-employed and family workers—was the highest in both urban and rural areas, being much higher in the case of rural areas. Besides, informal labour categories of employment presented much lower real income levels vis-à-vis formal employment (e.g. employees, employers, professionals, etc.). Real incomes earned by informal workers in turn tended to stagnate over time, presenting only very moderate increases. Consequently, poverty incidence was the highest among informal labour categories.

4. The Role of Employment and the Labour Market in Reducing Poverty: a Micro Level Analysis

The above discussion focused basically on a macro level analysis of how economic growth could contribute to poverty reduction through increases in employment in higher productivity sectors/occupations and a rise in real wages. A similar analysis could be carried out at the micro (household) level to examine the impact of employment and labour market related variables on poverty. Conceptually, it is possible to link a number of variables that could influence the probability of a household being poor in terms of inadequate income. The variables could be asset-related (e.g., the possession of income-generating assets), human capital related (e.g., education and skill levels of the working members of a household) or employment related (e.g., the sector and quantity of employment of the workers, wages, productivity, etc.).

This type of analysis is carried out in this section based on an econometric Probit type model, estimated based on data from household surveys. The database utilized corresponds to the household survey for year 2000.

The dependent variable is Fgt_0, a discrete variable that takes value one when the household is poor, in terms of inadequate income, and zero in the case of a non-poor household. The variables utilized to run the regressions were of the three types discussed above: human capital, employment and asset related variables:

Human capital related variables

sex_1: sex of household head: 0=female, 1=male
Age_1: age of household head
Leng: mother tong of household head: 0= others, 1= Spanish
Mem10_1: number of household members between 10 and 17 years of age
Mem18__1: number of household members between 18 and 59 years of age
Sizhh1: household size
Sizhh2: square power of household size
Edumax: Maximum educational level attained by any household member

Employment related variables

Secind_1: 1 = household head employed in the secondary sector
Terind_1: 1 = household head employed in the tertiary sector
Urbrur-1 Location of household: 0 = rural, 1 = urban

Asset related variables

actfis_1: Number o physical assets owned by household (max 5)
dwelling
land in the urban area
land in the rural area
automobile
agriculture equipment
actfin_1: Number of financial assets owned by household (max 2)

bank account
household's lending to other household

accfin_1 : Access to formal lending (max 2)
bank debt due to mortgages
credit cards
acnofo_1: Access to informal credit

The results obtained appear in detail annex F. A summary of these results are presented in Table 16.

TABLE 16
SUMMARY OF RESULTS OF THE PROBIT MODEL
(Household Survey 2000)

VARIABLES	**Model 1**	**Model 2**
Human capital related variables		
Sex_1	-0.072	-0.078
Age_1	-0.005	-0.003
Language	-0.457	-0.444
Membr10_1	-0.106	-0.132
Mem18_1	-0.187	-0.187
Sizhh1	0.522	0.525
sizhh2	-0.016	-0.016
edumaxad	-0.082	-0.084
Employment related variables		
secind_1	-0.291	
tercind_1	-0.517	
location		-0.285
Asset related variables		
actfis_1	-0.188	-0.171
actfin_1	-0.344	-0.348
accfin_1	-0.365	-0.390
acnofo_1	-0.134	-0.130
constant	0.758	0.603

a) Human capital related variables

According to the results obtained, in 2000 human capital related variables had a significant influence on the probability of a household being poor. The variable sex-of-household-head for instance reduces the probability of a household being poor by 7.3% when the household head is a man. The age of the household head contributes to reducing the probability of a household being poor by 0.5% per additional year of age of the household head. The Language spoken by the household head has a significant impact on the probability of whether the household is poor or non-poor. The fact that the household head has Spanish as his mother tongue decreases the probability of the household being poor by 45.7%. The number of household members within the working age contributes to reducing the probability of a household being poor. In the case of household members between 10 and 17 years of age for instance, the household's probability of being poor decreases by 10.6% per each of the members fulfilling this condition. In the case of household members who are between 18 and 59 years of age, the household's probability of being poor is reduced by 18.7%, per each member fulfilling this condition. The household size reduces the probability of being poor by 1.6% per each additional member of the household. Finally, the maximum educational level attained by the household head reduces the probability of the household being poor by an additional 8.2% per each incremental educational level attained.

The variable related to human capital conditions plays a significant role in determining the probability of a household being poor or non-poor. The existence of household members who are within the working age reduces the probability of the household being affected by poverty. Household size has a moderate impact in reducing the probability of the household being affected by poverty. Finally, educational levels attained by the household head again proved to be quite significant in increasing the probability of the household escaping from poverty.

b) Employment related variables

Employment related variables were also tested and proved to have a significant impact in determining the probability of a household being poor. Considering the activity sector where workers are employed produces the following results: the fact that a household head is engaged in both modern secondary and tertiary activity sectors, decreases the household's probability of being poor. When a household head is working in secondary sector activities, the probability the household being poor decreases by 29.1%, and decreases by 51.7% when the household head is engaged in tertiary sector activities.

The results obtained through the econometric model demonstrated that employment related variables are important in determining the probability of a household being poor. The most relevant variable was the activity sector where the household head is employed. Variables such as formality of workers and location (i.e. urban vis-à-vis rural areas) are also important in determining the probability of being poor. However, these variables have a high degree of correlation with the activity sector. Thus, their effects tend to cancel-out when they are considered together in the same regression. As it can be seen in Table 14, a second Probit model was estimated, where the location variable was considered instead of the activity sector variable. The results obtained in this second model show that, if the household is located in urban areas its probability of being poor is reduced by 28.5%.

c) Asset related variables

Asset related variables measure to what extent assets owned by the household increases their capacity to generate higher incomes and therefore reduce their probability of being poor. In the Probit model, different asset related variables were tested. A first group of variables were the ownership of physical assets by households: namely: dwelling, land in the urban area, agricultural land in the rural area, automobile, and agriculture equipment. The ownership of any of these assets reduced the probability of a household being poor by 18.9%. Other variable tested was the ownership by households of financial assets. Two categories of financial assets were tested: i.e. bank accounts—in any of its forms: sight accounts, saving accounts, time deposits, etc.—and informal lending by households to other households. The ownership of this type of financial assets decreases the probability of households being poor by 34.4%. This also highlights the fact that only rich households hold financial assets.

Besides, physical and financial asset, the Probit model also included variables that measure the access of households to credit, either through formal or informal channels. The access of households to formal mechanisms of finance reduces their probability of being poor by 36.5%, while access to informal credit channels decreases the probability of the household being poor by 13.4%.

In summary, educational and occupational interventions appear to provide the most important conduct for poverty reduction. Moving workers from low productivity agricultural activities to more productive jobs in the manufacturing or service sector can contribute to poverty reduction. However, sustained, larger reductions in poverty should be sought through education and, therefore, through changes in the structure of the labour force made possible by a better educated labour force. Facilitating household access to productive assets can also have an important impact on reducing poverty. The same applies in the case of household's access to credit, which can also help to increase the probability of households to escaping from poverty.

5. Conclusions and Policy Implications

The aim of this study was to analyze the existing linkages between economic growth, employment and poverty at both the macro and micro levels, using the Bolivian experience over the last two decades as a case study.

At the macro level, the linkage between output growth and poverty was conceptualised in terms of the average productivity of the employed work force, which in turn was reflected in low levels of real wages and low levels of earnings in self-employment. A first conclusion of this study was that, in general terms, growth in the Bolivian economy has not been particularly favourable in terms of employment creation. During the years of relatively rapid economic growth, the sectors which presented the highest growth rates were those with the lowest employment-output ratios.

The analysis of employment and output growth at the macroeconomic level shows that during the period under study, the Bolivian economy went from a period of relatively rapid and stable growth to a period of economic crisis characterized by slower growth and lower employment creation. However, overall it cannot be said that economic growth contributed to poverty reduction because it did not generate enough quantities of employment with high levels of productivity, which could have formed the basis for

sustainable real income increases for workers. First, economic growth tended to be concentrated in low employment intensity sectors, such as financial services, transport and telecommunication, electricity, gas and water, etc. Second, commerce was the only labour-intensive sector that presented stable and relatively high growth rates in employment. However, employment creation in this sector exhibited low and sharply decreasing productivity. This is explained by the large amount of workers that were engaged in low-paid, small-scale commerce and related service activities, as a means to increase income opportunities to poor households. Third, productivity growth across sectors and for the economy as a whole was very limited over the whole period under analysis. This limits the capacity of economic growth to become the basis for higher real wages and incomes of workers.

The analysis of manufacturing sector data tells us a similar story. In general terms, the manufacturing sector also experienced a period of rapid economic growth during most of the 1990s, and a period of reduced growth at the end of the 1990s and beginning of the 2000s. The high growth rates in production and employment exhibited by the manufacturing sector during most of the 1990s permitted productivity to stay at a constant level during that period. Coupled with the foregoing, real wages and wage/price indexes increased faster than productivity, reducing the manufacturing sector's profitability and competitive position. During the economic crisis at the end of the 1990s and beginning of the 2000s, manufacturing firms reduced employment in order to achieve productivity gains. Real wages however still experienced high growth rates.

A disaggregated analysis of the manufacturing sector shows some similarities between output, employment, productivity and real wages behaviour for the different branches comprising the manufacturing sector vis-à-vis the manufacturing sector as a whole. Most manufacturing sub-sectors experienced a period—during most of the 1990s—of fast output and employment growth, coupled with productivity losses; followed by a period of slower output growth and negative employment growth, coupled with productivity losses. During the 1990s, in almost all manufacturing sub-sectors real wages increased faster than labour productivity. This trend reversed at the end of the 1990s when the economic crisis began.

The analysis of the changes which occurred in the structure of employment and in the productivity of various sectors and occupations—especially of those where poor are engaged in large numbers—shows that economic growth has not translated into growth of productive employment. In general terms, the poor have remained in low productivity employment. This trend has meant that that real wages and earnings—which are the main channels through which the benefits of higher output growth and increased productivity are likely to reach the poor have been largely depressed for the poorest and least qualified segments of the labour force.

The most important shift was the continuous migration of workers from rural to urban areas as a means of escaping from extreme poverty. The large disparities existing between urban and rural incomes, the differentiated access by urban and rural households to basic services, such as education, health, and water facilities has also promoted urban migration.

In rural areas, the largest share of workers is engaged in agricultural activities, which generate the lowest paid jobs and highest poverty incidence. Other rural activities

generate better-paid jobs but their incidence in total rural employment is very limited. In urban areas, employment is mostly concentrated in the service sectors, which present the fastest growing employment creation overtime. However, the employment created in the service sectors was of very low productivity and poorly paid for instance, in activities such as commerce, transport and other services.

The share of informal labour categories in total employment—self-employed and family workers—was the highest in both urban and rural areas, being much higher in the case of rural areas. Besides, informal labour categories of employment presented much lower real income levels vis-à-vis formal employment (e.g. employees, employers, professionals, etc.). Real incomes earned by informal workers in turn tended to stagnate over time, presenting only very moderate increases. Consequently, poverty incidence was highest amongst informal labour categories.

At the micro level of households, the analysis of the existing linkage between poverty and employment was carried out through an econometric Probit model, linking a number of variables which could influence the probability of a household being poor in terms of inadequate income. The variables tested were: first, human-capital related variables, such as education and skill levels of working members of households, sex and age of household head; second, employment related variables such as the type of activity where the household head is engaged; and third, asset related variables, such as a household's access to productive assets and to any form of financial credit. The main results obtained were that educational and occupational interventions appear to provide the most important variables in reducing poverty. Moving workers from low productivity agricultural activities to more productive jobs in the manufacturing or service sector can contribute to poverty reduction. However, sustained, larger reductions in poverty should be sought through education and, therefore, through changes in the structure of the labour force made possible by a better educated labour force. Finally, access of households to productive assets and to credit can also help them to improve their living conditions.

Policy implications

The economic and social policy implications derived from the analysis carried out in this paper can be grouped in actions aimed at i) expanding employment and income opportunities for the poor, ii) developing the productive capacities of the poor, and iii) increasing participation and social integration. These policies are consistent and have also been included in the Bolivian Poverty Reduction Strategy (BPRS) created by the Bolivian Government. The specific components of these policies are analysed in more detail in what follows.

Expanding employment and income opportunities for the poor

i) Promoting rural development

As stated in the paper, the poorest sectors of the Bolivian society are located in the rural areas and are engaged in employment in the agricultural sector. Thus, promoting rural development is one of the paramount challenges of any poverty reduction strategy. This can be attained by a number of specific actions, such as: increasing the production infrastructure by building and maintaining local roads, building and maintaining irrigation and micro-irrigation systems, establishing and maintaining electric power systems, and increasing access to telecommunications. Besides, it is also important to expand and improve access to land, and diversify non-agricultural employment.

ii) Developing microfinance

The support to be provided for microfinance would help to build an institutional environment conducive to the development of the urban and rural production sector. In Bolivia, the problems associated with the supply of credit can be mainly attributed to the limited coverage provided by microfinance institutions and the absence of a regulatory framework for the development of financial entities in rural areas. In this line of reasoning, the proposed policies should be aimed at overcoming the lack of access to credit in urban and rural areas: first, to diversify and expand microfinance coverage in urban and rural areas which are not served; second, to strengthen the institutional and regulatory framework and broaden the pool of potential borrowers and investors amongst small producers in urban and rural areas; and finally, to improve the quality of the supply of microfinance, particularly credit.

iii) Providing support for technical assistance

Support for research and technological innovation is tied directly with access to information and the dissemination of information, which in turn makes it possible to reduce transaction costs, enhance productivity, and in general increase the efficiency of investment in technological assistance. Specific actions to support technical assistance in urban and rural areas should be directed to promote the provision of technical assistance and training by the private sector, establishing an information system to link technical-assistance system supply and demand, developing an integrated technical-assistance system, and implementing business development services to assist microenterprises and small businesses.

iv) Expanding infrastructure for production

A major factor limiting competitiveness in the productive sector is the deficient productive infrastructure in the transport, electricity and telecommunication sectors. Thus, priority should be attached to improving the national road network. Adequate road infrastructure is necessary to promote commercial activities and allow access to essential products and hence enables the development of the most depressed communities, generates productive employment opportunities, and facilitates access to essential services.

Developing the productive capacity and reducing the vulnerability of the poor

i) Improving the quality of education and access to education

The strategic actions to be undertaken and the allocation of resources should put priority to primary school education, while keeping attention on the other levels and modalities: technical and university education. Thus policies should focus on: increasing the quality, efficiency and equity of access to educational services, especially for primary and secondary education. A set of programs should be developed aimed at strengthening educational management, raising teacher qualifications, adapting the school curriculum to the needs of the population, and introducing mechanisms to encourage participation and efficiency at the various levels of education.

ii) Guaranteeing ownership of the assets of the poor in the urban areas

Many of the plots on which the poor build their homes lack title deeds, which creates uncertainty regarding rights of the use and discourage investment in improvements. In order to establish ownership rights in peri-urban areas, steps should be taken to: first, update the urban property cadastre in the Municipalities; second, establish and improve registration of urban property; and third, establish an urban property municipal appraisal system.

iii) Guaranteeing small farmers' land ownership rights

There is a need to define individual ownership rights in order to facilitate the buying and selling of land, the use of this asset as collateral in obtaining credit, and its transfer through inheritance. To this end, the following policies should be continued and strengthen through: a) establishing and up keeping of a rural property cadastre; b) acceleration of land titling; and c) creation of a decentralized land appraisal system for rural areas.

iv) Increasing the value of assets of the poor

In order to raise the value of the assets possessed by the poor, programs should: a) provide basic services in peri-urban neighbourhoods; b) build local roads in rural areas; and c) construct micro-irrigation systems.

Increasing participation and social integration

i) Reduction of inequalities and barriers based on ethnic discrimination

Indigenous communities should be given training in order to benefit from the use of natural resources, and participation and organization schemes should be improved. Programs should be established to improve the access of indigenous people to the education system and assure their continued participation in it. Special attention should be paid to bilingual education and an intercultural approach, since these factors will clearly contribute to the reduction of ethnic inequalities in Bolivia.

ii) Promoting gender equity

Policies should be developed with the aim of supporting women's role in production activities and promoting the sale of their products. Support will be provided for the production capacity of microenterprises and small businesses, with emphasis on firms run by women. Support should be provided for the establishment of programs to allow rural women access to education at all levels. Moreover, women's access to quality health care services should be facilitated by governmental institutions.

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Annex A

Restricted Labour Demand Function

Dependent Variable: LGL?
Method: Pooled Least Squares
Date: 03/13/03 Time: 18:07
Sample(adjusted): 1990 2001
Included observations: 12 after adjusting endpoints
Number of cross-sections used: 5
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.106680	0.220535	0.483734	0.6305
LGL?(-1)	0.970237	0.057365	16.91342	0.0000
LGQ?	0.172912	0.051599	3.351059	0.0015
LGWR?	-0.134446	0.032306	-4.161691	0.0001
LGE?	-0.152975	0.044444	-3.442006	0.0011

R-squared	0.930799	Mean dependent var	4.824341
Adjusted R-squared	0.925767	S.D. dependent var	0.182696
S.E. of regression	0.049777	Sum squared resid	0.136277
Log likelihood	97.48605	F-statistic	184.9479
Durbin-Watson stat	1.012769	Prob(F-statistic)	0.000000

Annex B
Unrestricted Labour Demand Function

Dependent Variable: LGL?
Method: Pooled Least Squares
Date: 03/13/03 Time: 18:01
Sample(adjusted): 1990 2001
Included observations: 12 after adjusting endpoints
Number of cross-sections used: 5
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.313785	0.440903	-0.711686	0.4809
31--LGL31(-1)	0.791183	0.378850	2.088378	0.0433
32--LGL32(-1)	0.174964	0.218077	0.802301	0.4272
33--LGL33(-1)	0.721715	0.173615	4.156995	0.0002
35--LGL35(-1)	-0.354389	0.330269	-1.073030	0.2899
37--LGL37(-1)	0.980342	0.228618	4.288133	0.0001
31--LGQ31	0.300756	0.653815	0.460002	0.6481
32--LGQ32	0.688818	0.155737	4.422955	0.0001
33--LGQ33	0.369936	0.121081	3.055280	0.0040
35--LGQ35	1.002977	0.312818	3.206260	0.0027
37--LGQ37	0.115499	0.168812	0.684187	0.4979
31--LGWR31	-0.270459	0.155228	-1.742337	0.0893
32--LGWR32	-0.003292	0.093341	-0.035265	0.9720
33--LGWR33	-0.688852	0.175475	-3.925643	0.0003
35--LGWR35	-0.495569	0.164076	-3.020359	0.0044
37--LGWR37	-0.126456	0.054587	-2.316580	0.0259
31--LGE31	-0.013439	0.486091	-0.027647	0.9781
32--LGE32	0.203935	0.316064	0.645233	0.5226
33--LGE33	-0.006992	0.122433	-0.057111	0.9547
35--LGE35	0.422884	0.347879	1.215606	0.2314
37--LGE37	-0.018540	0.279329	-0.066372	0.9474

R-squared	0.975371	Mean dependent var	4.824341
Adjusted R-squared	0.962741	S.D. dependent var	0.182696
S.E. of regression	0.035265	Sum squared resid	0.048501
Log likelihood	128.4789	F-statistic	77.22581
Durbin-Watson stat	1.603635	Prob(F-statistic)	0.000000

Annex C-1

BOLIVIA: NUMBER OF WORKERS BY ECONOMIC ACTIVITY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING	15.154	16.253	21.263	120.430	106.994	77.466	102.653	245.148
	MINING	20.455	16.044	18.143	36.346	48.813	17.184	35.333	24.401
	MANUFACTURING	126.124	111.340	199.005	351.066	338.868	370.544	320.843	305.095
	ELECTRICITY, GAS AND WATER	3.779	4.046	7.607	9.807	10.951	5.509	15.855	11.126
	COMMERCE, HOTELS AND RESTAURANTS	169.358	249.697	295.358	618.427	561.771	669.284	656.676	659.601
	CONSTRUCTION	41.954	56.406	94.325	147.325	158.633	176.543	217.643	165.131
	TRANSPORT AND COMMUNICATIONS	54.303	65.403	72.423	132.154	151.567	173.007	143.648	165.814
	FINANCIAL AND FIRM SERVICES	23.717	23.569	39.918	68.740	76.692	89.248	115.189	121.987
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES	246.581	315.525	260.342	432.344	421.183	437.066	480.468	457.338
	EXTRATERRITORIAL ORGANIZATIONS	896	3.770	6.594	1.608	2.054	1.193	2.867	609
	UNKNOWN	90	173	725					
	TOTAL	702.411	862.226	1.015.703	1.918.247	1.877.526	2.017.044	2.091.175	2.156.250
RURAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				1.514.941	1.434.865	1.375.881	1.313.441	1.471.600
	MINING				17.331	15.058	35.510	17.083	24.871
	MANUFACTURING				52.578	54.583	44.105	47.191	52.142
	ELECTRICITY, GAS AND WATER				58	78	2.626	1.388	239
	COMMERCE, HOTELS AND RESTAURANTS				79.083	70.644	62.447	64.102	69.641
	CONSTRUCTION				25.032	28.382	35.957	24.067	26.227
	TRANSPORT AND COMMUNICATIONS				15.399	18.964	8.054	13.594	14.483
	FINANCIAL AND FIRM SERVICES				1.249	2.150	1.840	2.418	3.749
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				51.802	67.491	54.429	62.527	64.663
	EXTRATERRITORIAL ORGANIZATIONS								
	UNKNOWN								386
	TOTAL				1.757.473	1.692.215	1.620.849	1.545.811	1.728.001
NATIONAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				1.635.371	1.541.859	1.453.347	1.416.094	1.716.748
	MINING				53.677	63.871	52.694	52.416	49.272
	MANUFACTURING				403.644	393.451	414.649	368.034	357.237
	ELECTRICITY, GAS AND WATER				9.865	11.029	8.135	17.243	11.365
	COMMERCE, HOTELS AND RESTAURANTS				697.510	632.415	731.731	720.778	729.242
	CONSTRUCTION				172.357	187.015	212.500	241.710	191.358
	TRANSPORT AND COMMUNICATIONS				147.553	170.531	181.061	157.242	180.297
	FINANCIAL AND FIRM SERVICES				69.989	78.842	91.088	117.607	125.736
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				484.146	488.674	491.495	542.995	522.001
	EXTRATERRITORIAL ORGANIZATIONS				1.608	2.054	1.193	2.867	609
	UNKNOWN								386
	TOTAL				3.675.720	3.569.741	3.637.893	3.636.986	3.884.251

Source : National Institute of Statistics

Annex C-2

BOLIVIA: PERCENTAGE OF WORKERS BY ECONOMIC ACTIVITY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING	2,2%	1,9%	2,1%	6,3%	5,7%	3,8%	4,9%	11,4%
	MINING	2,9%	1,9%	1,8%	1,9%	2,6%	0,9%	1,7%	1,1%
	MANUFACTURING	18,0%	12,9%	19,6%	18,3%	18,0%	18,4%	15,3%	14,1%
	ELECTRICITY, GAS AND WATER	0,5%	0,5%	0,7%	0,5%	0,6%	0,3%	0,8%	0,5%
	COMMERCE, HOTELS AND RESTAURANTS	24,1%	29,0%	29,1%	32,2%	29,9%	33,2%	31,4%	30,6%
	CONSTRUCTION	6,0%	6,5%	9,3%	7,7%	8,4%	8,8%	10,4%	7,7%
	TRANSPORT AND COMMUNICATIONS	7,7%	7,6%	7,1%	6,9%	8,1%	8,6%	6,9%	7,7%
	FINANCIAL AND FIRM SERVICES	3,4%	2,7%	3,9%	3,6%	4,1%	4,4%	5,5%	5,7%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES	35,1%	36,6%	25,6%	22,5%	22,4%	21,7%	23,0%	21,2%
	EXTRATERRITORIAL ORGANIZATIONS	0,1%	0,4%	0,6%	0,1%	0,1%	0,1%	0,1%	0,0%
	UNKNOWN	0,0%	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%
	TOTAL	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
RURAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				86,2%	84,8%	84,9%	85,0%	85,2%
	MINING				1,0%	0,9%	2,2%	1,1%	1,4%
	MANUFACTURING				3,0%	3,2%	2,7%	3,1%	3,0%
	ELECTRICITY, GAS AND WATER				0,0%	0,0%	0,2%	0,1%	0,0%
	COMMERCE, HOTELS AND RESTAURANTS				4,5%	4,2%	3,9%	4,1%	4,0%
	CONSTRUCTION				1,4%	1,7%	2,2%	1,6%	1,5%
	TRANSPORT AND COMMUNICATIONS				0,9%	1,1%	0,5%	0,9%	0,8%
	FINANCIAL AND FIRM SERVICES				0,1%	0,1%	0,1%	0,2%	0,2%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				2,9%	4,0%	3,4%	4,0%	3,7%
	EXTRATERRITORIAL ORGANIZATIONS				0,0%	0,0%	0,0%	0,0%	0,0%
	UNKNOWN				0,0%	0,0%	0,0%	0,0%	0,0%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%
NATIONAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				44,5%	43,2%	40,0%	38,9%	44,2%
	MINING				1,5%	1,8%	1,4%	1,4%	1,3%
	MANUFACTURING				11,0%	11,0%	11,4%	10,1%	9,2%
	ELECTRICITY, GAS AND WATER				0,3%	0,3%	0,2%	0,5%	0,3%
	COMMERCE, HOTELS AND RESTAURANTS				19,0%	17,7%	20,1%	19,8%	18,8%
	CONSTRUCTION				4,7%	5,2%	5,8%	6,6%	4,9%
	TRANSPORT AND COMMUNICATIONS				4,0%	4,8%	5,0%	4,3%	4,6%
	FINANCIAL AND FIRM SERVICES				1,9%	2,2%	2,5%	3,2%	3,2%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				13,2%	13,7%	13,5%	14,9%	13,4%
	EXTRATERRITORIAL ORGANIZATIONS				0,0%	0,1%	0,0%	0,1%	0,0%
	UNKNOWN				0,0%	0,0%	0,0%	0,0%	0,0%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%

Source : National Institute of Statistics

Annex C-3
BOLIVIA: AVERAGE REAL EARNINGS OF WORKERS BY ECONOMIC ACTIVITY AND LOCATION
(Constant Bolivianos in 2000)

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING	489,77	1.615,83	1.771,66	655,55	1.332,68	487,17	628,94	739,01
	MINING	333,16	1.046,63	1.350,79	1.490,24	1.601,25	2.771,75	4.208,74	1.806,14
	MANUFACTURING	299,82	845,40	793,81	874,59	1.045,63	794,29	827,82	724,88
	ELECTRICITY, GAS AND WATER	370,93	1.584,84	1.419,49	1.954,39	3.110,21	2.165,19	2.488,18	1.492,80
	COMMERCE, HOTELS AND RESTAURANTS	357,63	793,96	819,14	1.077,14	1.128,62	898,05	736,58	624,08
	CONSTRUCTION	367,39	1.115,50	946,38	974,12	1.222,22	1.365,50	1.187,36	1.009,70
	TRANSPORT AND COMMUNICATIONS	688,02	1.395,68	1.213,42	1.578,28	1.760,51	1.465,83	1.470,50	1.277,99
	FINANCIAL AND FIRM SERVICES	564,59	1.652,42	1.873,25	2.326,06	2.198,02	2.358,44	2.341,21	2.311,55
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES	255,90	904,75	848,66	1.029,81	1.156,14	1.150,12	1.135,07	1.219,80
	EXTRATERRITORIAL ORGANIZATIONS	304,58	1.524,14	1.802,37	2.832,66	10.815,61	787,09	4.058,46	1.041,96
	UNKNOWN	.		2.073,23					
	TOTAL	344,08	957,15	945,20	1.107,25	1.278,61	1.091,42	1.099,07	971,02
RURAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				248,63	373,28	139,47	152,19	144,78
	MINING				924,47	821,78	669,23	742,33	754,54
	MANUFACTURING				568,78	936,20	416,73	403,03	418,68
	ELECTRICITY, GAS AND WATER				237,54	805,50	1.211,87	874,34	847,01
	COMMERCE, HOTELS AND RESTAURANTS				652,11	1.203,37	788,08	480,00	515,66
	CONSTRUCTION				878,66	818,89	671,37	691,11	759,42
	TRANSPORT AND COMMUNICATIONS				1.342,95	1.306,30	1.606,80	1.170,14	1.048,69
	FINANCIAL AND FIRM SERVICES				1.114,50	2.161,72	2.145,29	565,49	830,94
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				744,28	750,71	979,31	756,47	807,58
	EXTRATERRITORIAL ORGANIZATIONS								
	UNKNOWN								-
	TOTAL				368,63	526,83	234,05	223,05	220,03
NATIONAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING	489,77	1.615,83	1.771,66	291,71	472,08	158,00	186,75	229,63
	MINING	333,16	1.046,63	1.350,79	1.316,98	1.414,40	1.354,88	3.079,00	1.275,33
	MANUFACTURING	299,82	845,40	793,81	837,44	1.031,48	754,13	773,35	680,19
	ELECTRICITY, GAS AND WATER	370,93	1.584,84	1.419,49	1.944,30	3.093,91	1.857,45	2.358,28	1.479,22
	COMMERCE, HOTELS AND RESTAURANTS	357,63	793,96	819,14	1.032,27	1.136,11	888,66	713,76	613,73
	CONSTRUCTION	367,39	1.115,50	946,38	960,20	1.161,04	1.248,05	1.137,95	975,39
	TRANSPORT AND COMMUNICATIONS	688,02	1.395,68	1.213,42	1.553,55	1.711,23	1.472,10	1.444,54	1.259,57
	FINANCIAL AND FIRM SERVICES	564,59	1.652,42	1.873,25	2.304,01	2.197,01	2.354,13	2.304,70	2.267,40
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES	255,90	904,75	848,66	999,21	1.099,99	1.131,20	1.091,47	1.168,73
	EXTRATERRITORIAL ORGANIZATIONS	304,58	1.524,14	1.802,37	2.832,66	10.815,61	787,09	4.058,46	1.041,96
	UNKNOWN	.		2.073,23					
	TOTAL	344,08	957,15	945,20	852,59	1.024,04	709,81	726,74	636,92

Source : National Institute of Statistics

Annex C-4

BOLIVIA : POVERTY INCIDENCE BY ECONOMIC ACTIVITY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING		50,3%	69%	76,4%	73,9%	73,5%	68,5%	52,9%
	MINING		64,6%	64%	62,6%	54,9%	47,6%	49,2%	39,1%
	MANUFACTURING		63,8%	70%	53,8%	46,6%	60,0%	40,3%	51,2%
	ELECTRICITY, GAS AND WATER		42,7%	54%	6,4%	21,8%	38,0%	40,2%	25,5%
	COMMERCE, HOTELS AND RESTAURANTS		60,0%	66%	49,2%	43,8%	40,7%	34,3%	48,1%
	CONSTRUCTION		63,7%	73%	57,0%	49,0%	47,1%	58,6%	56,4%
	TRANSPORT AND COMMUNICATIONS		52,4%	56%	38,2%	36,6%	41,5%	25,1%	44,4%
	FINANCIAL AND FIRM SERVICES		34,8%	31%	19,4%	16,3%	24,0%	12,0%	22,1%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES		53,7%	51%	35,2%	34,5%	33,1%	21,6%	30,9%
	EXTRATERRITORIAL ORGANIZATIONS		64,6%	46%	0,0%	0,0%	100,0%	0,0%	100,0%
	UNKNOWN			47%					
	TOTAL		57,0%	61%	47,4%	42,8%	43,8%	34,9%	44,1%
RURAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING				92,9%	89,6%	84,5%	97,3%	86,5%
	MINING				61,0%	54,1%	64,2%	81,6%	48,4%
	MANUFACTURING				66,4%	64,4%	74,3%	93,4%	69,0%
	ELECTRICITY, GAS AND WATER				100,0%	0,0%	86,3%	82,6%	100,0%
	COMMERCE, HOTELS AND RESTAURANTS				55,6%	48,8%	46,4%	58,3%	49,9%
	CONSTRUCTION				64,3%	51,8%	65,7%	87,3%	55,0%
	TRANSPORT AND COMMUNICATIONS				46,4%	39,4%	45,3%	72,7%	44,2%
	FINANCIAL AND FIRM SERVICES				14,7%	34,0%	41,5%	68,2%	31,6%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES				47,3%	46,4%	37,6%	55,4%	30,7%
	EXTRATERRITORIAL ORGANIZATIONS								
	UNKNOWN								100,0%
	TOTAL				87,9%	83,8%	80,1%	93,2%	80,9%
NATIONAL									
ACTIVITY	AGRICULTURE, FORESTRY AND FISHING		50,3%	69%	91,7%	88,6%	83,9%	95,2%	81,7%
	MINING		64,6%	64%	62,1%	54,7%	58,8%	59,7%	43,8%
	MANUFACTURING		63,8%	70%	55,5%	49,1%	61,5%	47,1%	53,8%
	ELECTRICITY, GAS AND WATER		42,7%	54%	6,9%	21,7%	53,6%	43,6%	27,0%
	COMMERCE, HOTELS AND RESTAURANTS		60,0%	66%	49,9%	44,3%	41,1%	36,5%	48,3%
	CONSTRUCTION		63,7%	73%	58,1%	49,4%	50,3%	61,5%	56,2%
	TRANSPORT AND COMMUNICATIONS		52,4%	56%	39,1%	36,9%	41,6%	29,2%	44,4%
	FINANCIAL AND FIRM SERVICES		34,8%	31%	19,3%	16,8%	24,3%	13,1%	22,4%
	PUBLIC ADMINISTRATION, COMMUNAL AND PERSONAL SERVICES		53,7%	51%	36,5%	36,2%	33,6%	25,5%	30,8%
	EXTRATERRITORIAL ORGANIZATIONS		64,6%	46%	0,0%	0,0%	100,0%	0,0%	100,0%
	UNKNOWN			47%					100,0%
	TOTAL		57,0%	61%	66,7%	62,2%	60,0%	59,7%	60,5%

Source : National Institute of Statistics

Annex D-1

BOLIVIA : NUMBER OF WORKERS BY LABOUR CATEGORY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
LABOR	LABORERS	74.292	90.479	193.082	267.254	268.842	206.799	229.467	263.748
CATEGORY	EMPLOYEES	291.274	312.943	310.637	515.284	545.459	693.594	692.687	695.291
	FAMILY WORKERS	21.550	39.399	54.323	291.472	175.425	177.507	162.228	287.071
	EMPLOYERS	30.874	29.725	56.511	142.617	133.223	85.907	62.347	66.632
	PROFESSIONALS	7.115	8.699	9.467		16.514			
	SELF-EMPLOYED	245.463	324.382	332.475	605.840	661.831	788.426	847.348	730.179
	OTHERS	31.843	56.599	59.208	95.780	76.232	64.811	97.098	113.329
	TOTAL	702.411	862.226	1.015.703	1.918.247	1.877.526	2.017.044	2.091.175	2.156.250
RURAL									
LABOR	LABORERS				95.112	85.805	88.817	65.801	113.940
CATEGORY	EMPLOYEES				50.335	64.049	62.073	67.173	71.771
	FAMILY WORKERS				923.420	843.604	758.943	726.178	845.146
	EMPLOYERS				74.647	58.548	21.046	8.456	19.024
	PROFESSIONALS					346			
	SELF-EMPLOYED				607.292	628.677	674.745	668.684	657.518
	OTHERS				6.667	11.186	15.225	9.519	20.602
	TOTAL				1.757.473	1.692.215	1.620.849	1.545.811	1.728.001
NATIONAL									
LABOR	LABORERS				362.366	354.647	295.616	295.268	377.688
CATEGORY	EMPLOYEES				565.619	609.508	755.667	759.860	767.062
	FAMILY WORKERS				1.214.892	1.019.029	936.450	888.406	1.132.217
	EMPLOYERS				217.264	191.771	106.953	70.803	85.656
	PROFESSIONALS					16.860			
	SELF-EMPLOYED				1.213.132	1.290.508	1.463.171	1.516.032	1.387.697
	OTHERS				102.447	87.418	80.036	106.617	133.931
	TOTAL				3.675.720	3.569.741	3.637.893	3.636.986	3.884.251

Source : National Institute of Statistics

Annex D-2
BOLIVIA: PERCENTAGE OF WORKERS BY LABOUR CATEGORY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
LABOR	LABORERS	10,6%	10,5%	19,0%	13,9%	14,3%	10,3%	11,0%	12,2%
CATEGORY	EMPLOYEES	41,5%	36,3%	30,6%	26,9%	29,1%	34,4%	33,1%	32,2%
	FAMILY WORKERS	3,1%	4,6%	5,3%	15,2%	9,3%	8,8%	7,8%	13,3%
	EMPLOYERS	4,4%	3,4%	5,6%	7,4%	7,1%	4,3%	3,0%	3,1%
	PROFESSIONALS	1,0%	1,0%	0,9%	0,0%	0,9%	0,0%	0,0%	0,0%
	SELF-EMPLOYED	34,9%	37,6%	32,7%	31,6%	35,3%	39,1%	40,5%	33,9%
	OTHERS	4,5%	6,6%	5,8%	5,0%	4,1%	3,2%	4,6%	5,3%
	TOTAL	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
RURAL									
LABOR	LABORERS				5,4%	5,1%	5,5%	4,3%	6,6%
CATEGORY	EMPLOYEES				2,9%	3,8%	3,8%	4,3%	4,2%
	FAMILY WORKERS				52,5%	49,9%	46,8%	47,0%	48,9%
	EMPLOYERS				4,2%	3,5%	1,3%	0,5%	1,1%
	PROFESSIONALS				0,0%	0,0%	0,0%	0,0%	0,0%
	SELF-EMPLOYED				34,6%	37,2%	41,6%	43,3%	38,1%
	OTHERS				0,4%	0,7%	0,9%	0,6%	1,2%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%
NATIONAL									
LABOR	LABORERS				9,9%	9,9%	8,1%	8,1%	9,7%
CATEGORY	EMPLOYEES				15,4%	17,1%	20,8%	20,9%	19,7%
	FAMILY WORKERS				33,1%	28,5%	25,7%	24,4%	29,1%
	EMPLOYERS				5,9%	5,4%	2,9%	1,9%	2,2%
	PROFESSIONALS				0,0%	0,5%	0,0%	0,0%	0,0%
	SELF-EMPLOYED				33,0%	36,2%	40,2%	41,7%	35,7%
	OTHERS				2,8%	2,4%	2,2%	2,9%	3,4%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%

Source : National Institute of Statistics

Annex D-3
BOLIVIA: AVERAGE REAL EARNINGS OF WORKERS BY LABOUR CATEGORY AND LOCATION
(Constant Bolivianos in 2000)

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
LABOR	LABORERS	208,08	748,50	744,68	759,16	844,51	880,06	827,26	802,20
CATEGORY	EMPLOYEES	324,45	1.125,68	1.126,19	1.335,88	1.520,89	1.522,63	1.778,41	1.571,39
	FAMILY WORKERS	.	69,05	499,16	328,83	891,80	-	4,27	6,02
	EMPLOYERS	774,06	2.307,91	2.430,77	2.582,64	3.137,91	2.685,31	2.565,00	2.568,30
	PROFESSIONALS	1.008,31	2.552,17	2.446,48		2.781,85			
	SELF-EMPLOYED	393,13	892,98	724,89	844,41	945,11	876,80	773,28	752,19
	OTHERS	59,71	378,06	286,79	646,92	707,38	1.163,33	781,51	578,00
	TOTAL	344,08	957,15	945,20	1.107,25	1.278,61	1.091,42	1.099,07	971,02
RURAL									
LABOR	LABORERS				639,27	734,19	642,61	688,03	664,05
CATEGORY	EMPLOYEES				803,36	798,72	1.026,89	915,47	992,52
	FAMILY WORKERS				180,32	324,16	-	6,48	8,74
	EMPLOYERS				696,33	2.255,14	1.402,55	650,31	637,61
	PROFESSIONALS					3.434,35			
	SELF-EMPLOYED				258,05	316,27	330,54	331,87	309,84
	OTHERS				686,98	550,08	491,43	621,58	489,51
	TOTAL				368,63	526,83	234,05	223,05	220,03
NATIONAL									
LABOR	LABORERS				727,69	817,82	808,72	796,23	760,53
CATEGORY	EMPLOYEES				1.288,49	1.445,01	1.481,91	1.702,13	1.517,23
	FAMILY WORKERS				211,82	364,35	-	6,07	8,05
	EMPLOYERS				1.934,55	2.868,40	2.432,89	2.336,33	2.139,50
	PROFESSIONALS					2.795,24			
	SELF-EMPLOYED				550,88	638,77	624,89	578,58	542,60
	OTHERS				655,29	679,92	781,53	727,23	544,53
	TOTAL				852,59	1.024,04	709,81	726,74	636,92

Source : National Institute of Statistics

Annex D-4
BOLIVIA: POVERTY INCIDENCE BY LABOUR CATEGORY AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
LABOR	LABORERS		70,5%	73,7%	56,9%	52,4%	58,1%	63,6%	53,8%
CATEGORY	EMPLOYEES		52,7%	50,9%	31,9%	31,2%	31,8%	19,8%	28,5%
	FAMILY WORKERS		63,6%	74,0%	65,6%	56,3%	62,7%	41,9%	56,5%
	EMPLOYERS		34,5%	35,6%	33,7%	27,0%	20,6%	16,0%	23,5%
	PROFESSIONALS		16,1%	9,9%		8,4%			
	SELF-EMPLOYED		61,8%	70,5%	52,0%	49,2%	49,8%	40,1%	53,4%
	OTHERS		44,8%	45,4%	54,3%	48,1%	33,0%	49,5%	52,7%
	TOTAL		57,0%	61,3%	47,4%	42,8%	43,8%	34,9%	44,1%
RURAL									
LABOR	LABORERS				61,3%	51,5%	71,4%	96,2%	43,9%
CATEGORY	EMPLOYEES				50,9%	48,0%	40,2%	54,5%	27,0%
	FAMILY WORKERS				94,0%	92,7%	87,3%	97,1%	90,5%
	EMPLOYERS				72,8%	49,6%	46,1%	76,6%	63,9%
	PROFESSIONALS					0,0%			
	SELF-EMPLOYED				88,1%	83,6%	78,6%	93,4%	82,0%
	OTHERS				44,7%	60,1%	44,3%	58,0%	59,0%
	TOTAL				87,9%	83,8%	80,1%	93,2%	80,9%
NATIONAL									
LABOR	LABORERS				58,0%	52,2%	62,1%	70,9%	50,8%
CATEGORY	EMPLOYEES				33,5%	33,0%	32,5%	22,9%	28,3%
	FAMILY WORKERS				87,2%	86,4%	82,7%	87,0%	81,9%
	EMPLOYERS				47,2%	33,9%	25,6%	23,2%	32,4%
	PROFESSIONALS					8,2%			
	SELF-EMPLOYED				70,1%	66,0%	63,1%	63,6%	66,9%
	OTHERS				52,5%	49,7%	39,6%	47,1%	51,0%
	TOTAL				66,7%	62,2%	60,0%	59,7%	60,5%

Source : National Institute of Statistics

Annex E-1 BOLIVIA: NUMBER OF WORKERS BY EDUCATION LEVEL AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
EDUCATION	NO EDUCATION	44.334	2.567	285	100.671	105.308	89.651	91.274	109.510
LEVEL	BASIC	190.379	205.256	227.846	473.551	461.183	405.875	458.768	551.034
	INTERMEDIATE	106.241	139.367	177.529	350.674	298.679	381.246	340.266	280.954
	MEDIUM	188.381	240.938	315.706	530.535	562.510	615.637	679.030	668.771
	TECHNICAL	37.736	53.636	48.984	98.555	77.344	110.987	91.466	109.563
	NORMAL	40.096	36.212	44.986	76.912	83.022	88.405	80.268	74.547
	UNIVERSITY	83.544	112.674	130.827	219.664	230.804	278.844	285.843	318.133
	OTHERS	11.700	71.576	69.540	67.685	58.676	46.399	64.260	43.738
	TOTAL	702.411	862.226	1.015.703	1.918.247	1.877.526	2.017.044	2.091.175	2.156.250
RURAL									
EDUCATION	NO EDUCATION				448.288	413.661	416.731	352.924	337.789
LEVEL	BASIC				895.599	862.390	782.355	787.272	922.278
	INTERMEDIATE				248.453	239.603	243.134	236.365	220.679
	MEDIUM				134.038	126.998	130.975	132.047	191.346
	TECHNICAL				2.378	3.138	8.140	3.734	10.849
	NORMAL				20.750	32.296	20.694	20.466	22.426
	UNIVERSITY				5.044	8.393	6.032	4.901	9.931
	OTHERS				2.923	5.736	12.788	8.102	12.703
	TOTAL				1.757.473	1.692.215	1.620.849	1.545.811	1.728.001
NATIONAL									
EDUCATION	NO EDUCATION				548.959	518.969	506.382	444.198	447.299
LEVEL	BASIC				1.369.150	1.323.573	1.188.230	1.246.040	1.473.312
	INTERMEDIATE				599.127	538.282	624.380	576.631	501.633
	MEDIUM				664.573	689.508	746.612	811.077	860.117
	TECHNICAL				100.933	80.482	119.127	95.200	120.412
	NORMAL				97.662	115.318	109.099	100.734	96.973
	UNIVERSITY				224.708	239.197	284.876	290.744	328.064
	OTHERS				70.608	64.412	59.187	72.362	56.441
	TOTAL				3.675.720	3.569.741	3.637.893	3.636.986	3.884.251

Source : National Institute of Statistics

Annex E-2
BOLIVIA: PERCENTAGE OF WORKERS BY EDUCATION LEVEL AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
EDUCATION	NO EDUCATION	6,3%	0,3%	0,0%	5,2%	5,6%	4,4%	4,4%	5,1%
LEVEL	BASIC	27,1%	23,8%	22,4%	24,7%	24,6%	20,1%	21,9%	25,6%
	INTERMEDIATE	15,1%	16,2%	17,5%	18,3%	15,9%	18,9%	16,3%	13,0%
	MEDIUM	26,8%	27,9%	31,1%	27,7%	30,0%	30,5%	32,5%	31,0%
	TECHNICAL	5,4%	6,2%	4,8%	5,1%	4,1%	5,5%	4,4%	5,1%
	NORMAL	5,7%	4,2%	4,4%	4,0%	4,4%	4,4%	3,8%	3,5%
	UNIVERSITY	11,9%	13,1%	12,9%	11,5%	12,3%	13,8%	13,7%	14,8%
	OTHERS	1,7%	8,3%	6,8%	3,5%	3,1%	2,3%	3,1%	2,0%
	TOTAL	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
RURAL									
EDUCATION	NO EDUCATION				25,5%	24,4%	25,7%	22,8%	19,5%
LEVEL	BASIC				51,0%	51,0%	48,3%	50,9%	53,4%
	INTERMEDIATE				14,1%	14,2%	15,0%	15,3%	12,8%
	MEDIUM				7,6%	7,5%	8,1%	8,5%	11,1%
	TECHNICAL				0,1%	0,2%	0,5%	0,2%	0,6%
	NORMAL				1,2%	1,9%	1,3%	1,3%	1,3%
	UNIVERSITY				0,3%	0,5%	0,4%	0,3%	0,6%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%
NATIONAL									
EDUCATION	NO EDUCATION				14,9%	14,5%	13,9%	12,2%	11,5%
LEVEL	BASIC				37,2%	37,1%	32,7%	34,3%	37,9%
	INTERMEDIATE				16,3%	15,1%	17,2%	15,9%	12,9%
	MEDIUM				18,1%	19,3%	20,5%	22,3%	22,1%
	TECHNICAL				2,7%	2,3%	3,3%	2,6%	3,1%
	NORMAL				2,7%	3,2%	3,0%	2,8%	2,5%
	UNIVERSITY				6,1%	6,7%	7,8%	8,0%	8,4%
	OTHERS				1,9%	1,8%	1,6%	2,0%	1,5%
	TOTAL				100,0%	100,0%	100,0%	100,0%	100,0%

Source : National Institute of Statistics

Annex E-3 BOLIVIA : AVERAGE REAL EARNINGS OF WORKERS BY EDUCATION LEVEL AND LOCATION (constant Bolivianos in 2000)

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
EDUCATION	NO EDUCATION	155,94	305,62	208,93	496,63	526,53	473,96	490,63	395,66
LEVEL	BASIC	272,83	673,50	654,16	687,59	837,09	676,54	655,82	598,50
	INTERMEDIATE	313,08	815,19	691,33	787,33	990,61	779,41	719,24	603,24
	MEDIUM	331,82	927,66	821,23	990,19	1.144,97	1.041,24	842,26	775,80
	TECHNICAL	352,31	1.287,18	1.308,90	1.520,96	1.836,20	1.404,44	1.593,82	1.186,37
	NORMAL	314,65	767,58	770,63	1.018,12	1.076,73	1.152,86	979,91	1.148,17
	UNIVERSITY	563,60	1.841,60	2.207,22	2.755,33	2.945,38	2.027,21	2.719,39	2.386,51
	OTHERS	1.090,84	1.011,89	753,66	1.049,27	1.367,08	2.653,32	1.113,30	1.315,15
	TOTAL	344,08	957,15	945,20	1.107,25	1.278,61	1.091,42	1.099,07	971,02
RURAL									
EDUCATION	NO EDUCATION				168,44	197,98	119,71	94,43	99,96
LEVEL	BASIC				354,71	430,93	202,87	185,81	188,87
	INTERMEDIATE				482,42	747,01	295,40	309,85	261,80
	MEDIUM				713,62	1.123,78	341,85	458,40	326,14
	TECHNICAL				518,13	1.157,61	2.218,28	613,36	1.033,86
	NORMAL				915,65	824,38	895,64	890,78	999,74
	UNIVERSITY				1.564,30	4.298,99	1.866,22	1.099,43	1.582,16
	OTHERS				794,87	839,16	603,47	679,36	214,05
	TOTAL				368,63	526,83	234,05	223,05	220,03
NATIONAL									
EDUCATION	NO EDUCATION				259,67	299,56	182,43	175,84	172,36
LEVEL	BASIC				516,28	630,07	364,67	358,86	342,07
	INTERMEDIATE				702,82	917,16	590,94	551,43	453,03
	MEDIUM				951,98	1.142,24	918,55	779,76	675,77
	TECHNICAL				1.496,62	1.819,58	1.460,05	1.555,37	1.172,63
	NORMAL				996,96	1.006,32	1.104,07	961,80	1.113,84
	UNIVERSITY				2.732,41	2.991,18	2.023,80	2.692,08	2.362,16
	OTHERS				1.039,51	1.320,90	2.210,43	1.028,11	1.067,33
	TOTAL				852,59	1.024,04	709,81	726,74	636,92

Source : National Institute of Statistics

Annex E-4: BOLIVIA : POVERTY INCIDENCE BY EDUCATION LEVEL AND LOCATION

		1985	1989	1992	1996	1997	1999	2000	2001
URBAN									
EDUCATION	NO EDUCATION		92,9%	72,6%	61,4%	61,3%	58,8%	76,7%	66,6%
LEVEL	BASIC		68,0%	75,1%	61,3%	57,1%	58,4%	61,7%	58,3%
	INTERMEDIATE		62,6%	68,8%	56,9%	52,4%	58,6%	49,0%	57,2%
	MEDIUM		60,7%	63,1%	46,1%	40,1%	44,0%	27,3%	43,7%
	TECHNICAL		41,4%	34,9%	26,1%	22,2%	19,0%	8,3%	25,2%
	NORMAL		51,6%	56,0%	32,5%	24,0%	24,3%	2,3%	18,3%
	UNIVERSITY		30,1%	28,8%	16,9%	17,0%	14,7%	3,5%	15,0%
	OTHERS		29,8%	62,1%	36,1%	29,0%	34,5%	52,7%	34,1%
	TOTAL		57,0%	61,3%	47,4%	42,8%	43,8%	34,9%	44,1%
RURAL									
EDUCATION	NO EDUCATION				93,3%	90,3%	86,4%	99,3%	86,8%
LEVEL	BASIC				90,5%	87,4%	83,2%	96,5%	84,9%
	INTERMEDIATE				83,2%	78,3%	74,8%	91,2%	78,6%
	MEDIUM				71,9%	66,8%	68,8%	76,1%	67,7%
	TECHNICAL				37,3%	37,9%	8,2%	56,1%	30,1%
	NORMAL				40,6%	39,6%	31,8%	31,1%	10,9%
	UNIVERSITY				39,1%	25,2%	4,7%	35,3%	17,6%
	OTHERS				51,0%	49,9%	59,4%	61,3%	84,7%
	TOTAL				87,9%	83,8%	80,1%	93,2%	80,9%
NATIONAL									
EDUCATION	NO EDUCATION				87,4%	84,5%	81,5%	94,6%	81,9%
LEVEL	BASIC				80,4%	76,8%	74,7%	83,7%	75,0%
	INTERMEDIATE				67,8%	63,9%	64,9%	66,3%	66,6%
	MEDIUM				51,3%	45,0%	48,4%	35,3%	49,0%
	TECHNICAL				26,4%	22,8%	18,2%	10,1%	25,7%
	NORMAL				34,2%	28,3%	25,7%	8,1%	16,6%
	UNIVERSITY				17,4%	17,3%	14,5%	4,0%	15,1%
	OTHERS				36,7%	30,9%	39,9%	55,9%	45,5%
	TOTAL				66,7%	62,2%	60,0%	59,7%	60,5%

Source : National Institute of Statistics

Annex F

Probit Model to Determine Household's Probability of Being Poor

Description of Variables:

Fgt_0: probability of being poor: 1= poor 0=non poor

Human capital related variables

sex_1: sex of household head: 0=female, 1=male
Age_1: age of household head
Mem10_1: number of household members between 10 and 17 years of age
Mem18__1: number of household members between 18 and 59 years of age
Sizhh1: household size
Sizhh2: square power of household size
Edumaxad: Maximum educational level attained by any household member

Employment related variables

Primin_1: number of household members employed in the primary sector
Secind_1: number of household members employed in the secondary sector
Terind_1: number of household members employed in the tertiary sector
Formal_1: number of household members employed in the formal sector
Urb_rur: Area of residence: 1= urban, 0= rural

Asset related variables

actfis_1: Number o physical assets owned by household (max 5)
own house
land in the urban area
land in the rural area
automobile
agriculture equipment
actfin_1: Number of financial assets owned by household (max 2)
bank account
household's lending to other household

accfin_1 : Access to formal lending (max 2)
bank debt due to mortgages
credit cards
acnofo_1: Access to informal credit

Model Results

MODEL 1:

```
. probit fgt_0_1 sex_1 age_1 tonge_1 edu_19_1 mi10_17 mi18_59 sizehh_1 nro1_
> 1 actfis_1 actfin_1 accfin acnofo secind_j terind_j

Iteration 0:   log likelihood = -3211.8721
Iteration 1:   log likelihood = -2406.7599
Iteration 2:   log likelihood = -2360.1784
Iteration 3:   log likelihood = -2359.4182
Iteration 4:   log likelihood = -2359.4178

Probit estimates                                  Number of obs   =       4814
                                                  LR chi2(14)     =    1704.91
                                                  Prob > chi2     =     0.0000
                                 Log likelihood = -2359.4178      Pseudo R2       =     0.2654

------------------------------------------------------------------------------
      fgt_0_1 |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
      sexo_1 |  -.0725694   .0551229    -1.317   0.188     -.1806083    .0354696
      edad_1 |  -.0052562   .001451     -3.623   0.000       -.0081    -.0024124
    idioma_1 |  -.4571199   .046214     -9.891   0.000     -.5476977   -.366542
    edu_19_1 |  -.0815964   .0052489   -15.546   0.000      -.091884   -.0713088
    mi10_17 |  -.1059237   .0293214    -3.613   0.000     -.1633926    -.0484548
    mi18_59 |  -.1866701   .0277048    -6.738   0.000     -.2409706    -.1323697
    sizehh_1 |  -.0159093   .0034044    -4.673   0.000     -.0225819    -.0092368
    nro1_1 |   .5216645   .0378812    13.771   0.000      .4474188    .5959103
    actfis_1 |  -.1889644   .0248915    -7.592   0.000     -.2377508    -.1401781
    actfin_1 |  -.3436363   .0549225    -6.257   0.000     -.4512824    -.2359902
    accfin |  -.3650109   .0989872    -3.687   0.000     -.5590223   -.1709996
    acnofo |   -.133739   .0906275    -1.476   0.140     -.3113656    .0438875
    secind_j |  -.2906761   .0803098    -3.619   0.000     -.4480804    -.1332719
```

```
terind_j              | -.5171673   .0508132   -10.178    0.000    -.6167593   -
.4175753
constant              |  .7582848   .1195465     6.343    0.000     .5239779
.9925916
------------------------------------------------------------------------------
------------
```

MODEL 2:

```
probit fgt_0_1 sex_1 age_1 tonge_1 edu_19_1 mi10_17 mi18_59 urbrur_1 sizehh_
> 1 nro1_1 actfis_1 actfin_1 accfin acnofo

Iteration 0:   log likelihood = -3211.8721
Iteration 1:   log likelihood = -2439.1559
Iteration 2:   log likelihood = -2398.5838
Iteration 3:   log likelihood = -2398.0293
Iteration 4:   log likelihood = -2398.0291

Probit estimates                                  Number of obs   =       4814
                                                  LR chi2(13)     =    1627.69
                                                  Prob > chi2     =     0.0000
                                 Log likelihood = -2398.0291
                                 Pseudo R2       =     0.2534

------------------------------------------------------------------------------
-----
 fgt_0_1                |      Coef.       Std. Err.         z      P>|z|      [95% Conf. Interval]
---------+--------------------------------------------------------------------
------
sexo_1                  |  -.0776944   .0549574    -1.414   0.157      -.185409    .0300201
edad_1                  |  -.0031314   .0014485    -2.162   0.031     -.0059704   -.0002923
idioma_1        |  -.4441858    .046145    -9.626   0.000     -.5346284   -.3537432
edu_19_1        |  -.0844294   .0054174   -15.585   0.000     -.0950472   -.0738115
mi10_17                 |  -.1324239   .0288686    -4.587   0.000     -.1890053   -
.0758425
mi18_59                 |  -.1886       .0275327    -6.850   0.000     -.2425632   -
.1346369
urbrur_1                |  -.2845641   .0546332    -5.209   0.000     -.3916433   -
.1774849
sizehh_1                |  -.0159114   .0033971    -4.684   0.000     -.0225696   -
.0092532
nro1_1                  |   .5250981   .0377258    13.919   0.000      .4511569
.5990394
actfis_1                |  -.1712407   .0253687    -6.750   0.000     -.2209625   -
.1215189
actfin_1                |  -.3475555   .0544549    -6.382   0.000     -.4542851   -.240826
accfin          |  -.3895738   .0985812    -3.952   0.000     -.5827895   -.1963582
acnofo                  |   -.13023     .09006       -1.446   0.148     -.3067444
.0462845
constant                |   .6025107   .1174966     5.128   0.000      .3722215    .8327998
------------------------------------------------------------------------------
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```

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